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Service Manual

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1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

1.1 Technical Specifications
1.2 Connection Overview
1.3 Chassis Overview

Notes:

- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

1.1 Technical Specifications

1.1.1 Vision

Display type	:	LCD
Screen size	:	19" (51 cm), 16 : 9
	:	26" (66 cm), 16 : 9
Resolution (H × V pixels)	:	1440 × 900 (19")
	:	1366 × 768 (26")
Light output (cd/m^2)	:	300 (19")
	:	450 (26")
Typ. response time (ms)	:	8
Viewing angle (H × V degrees)	:	170 × 160 (19")
	:	160 × 160 (26")
Tuning system	:	NTSC M, PAL N/M
Video playback	:	NTSC, PAL (all versions)
Tuner bands	:	UHF, VHF, S & Hyper
Supported Computer Formats		
60 Hz	:	640 × 480
60 Hz	:	800 × 600
60 Hz	:	1024 × 768
60 Hz	:	1280 × 1024 (26")
50 Hz, 75 Hz	:	1440 × 900 (19")
Supported Video Formats		
60 Hz	:	480i
60 Hz	:	480p
50 Hz	:	576i
50 Hz	:	576p
50 Hz, 60 Hz	:	720p
50 Hz, 60 Hz	:	1080i

1.1.2 Sound

Sound systems	:	Mono
	:	Stereo
	:	SAP
Maximum power (W)	:	2 × 3 (19")
	:	2 × 5 (26")

1.1.3 Miscellaneous

Power supply		
- Mains voltage (V_{AC})	:	100 to 240
- Mains frequency (Hz)	:	50, 60
Power consumption (W)	:	50 (19")
	:	80 (26")
Stand-by (W)	:	< 0.3
Dimensions (W × H × D in mm)	:	473 × 353 × 69 (19")
	:	671 × 458 × 90 (26")
Weight (kg)	:	4.2 (19")
	:	7.7 (26")

1.2 Connection Overview

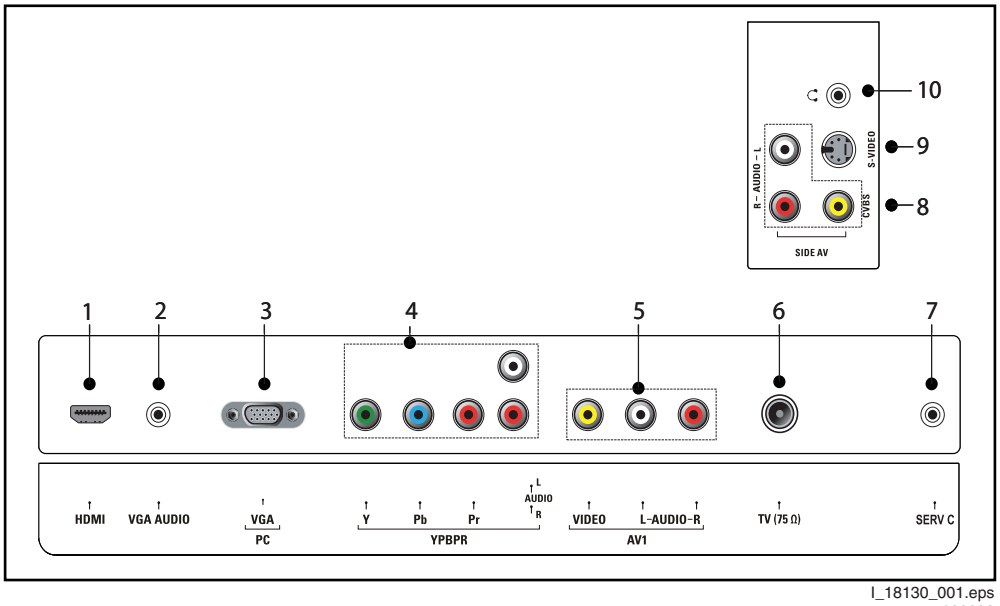

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Figure 1-1 Rear and side I/O connections

Note: The following connector color abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Rear Connections

1 - HDMI: Digital Video, Digital Audio - In

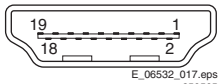

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Figure 1-2 HDMI (type A) connector

1	- D2+	Data channel	⊕
2	- Shield	Gnd	⏚
3	- D2-	Data channel	⊕
4	- D1+	Data channel	⊕
5	- Shield	Gnd	⏚
6	- D1-	Data channel	⊕
7	- D0+	Data channel	⊕
8	- Shield	Gnd	⏚
9	- D0-	Data channel	⊕
10	- CLK+	Data channel	⊕
11	- Shield	Gnd	⏚
12	- CLK-	Data channel	⊕
13	- n.c.		
14	- n.c.		
15	- DDC_SCL	DDC clock	⊕
16	- DDC_SDA	DDC data	⊕⊖→
17	- Ground	Gnd	⏚
18	- +5V		⊕
19	- HPD	Hot Plug Detect	⊕
20	- Ground	Gnd	⏚

2 - VGA AUDIO: Mini Jack: VGA Audio - In

Bk	- Audio L/R	0.5 V_{RMS} / 10 kΩ	⊕⊙

3 - VGA PC: Video RGB - In and Service UART

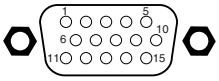

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Figure 1-3 VGA Connector

1	- Video Red	0.7 V_{PP} / 75 Ω	⊕
2	- Video Green	0.7 V_{PP} / 75 Ω	⊕
3	- Video Blue	0.7 V_{PP} / 75 Ω	⊕
4	- n.c.		
5	- Ground	Gnd	⏚
6	- Ground Red	Gnd	⏚
7	- Ground Green	Gnd	⏚
8	- Ground Blue	Gnd	⏚
9	- +5V_dc	+5 V	⊕
10	- Ground Sync	Gnd	⏚
11	- n.c.		
12	- DDC_SDA	DDC data	⊕⊖→
13	- H-sync	0 - 5 V	⊕
14	- V-sync	0 - 5 V	⊕
15	- DDC_SCL	DDC clock	⊕

4 - Cinch: Video YPbPr - In

Gn	- Video Y	1 V_{PP} / 75 Ω	⊕⊙
Bu	- Video Pb	0.7 V_{PP} / 75 Ω	⊕⊙
Rd	- Video Pr	0.7 V_{PP} / 75 Ω	⊕⊙
Wh	- Audio L	0.5 V_{RMS} / 10 kΩ	⊕⊙
Rd	- Audio R	0.5 V_{RMS} / 10 kΩ	⊕⊙

5 - AV1: Cinch: Video CVBS - In, Audio - In

Ye	- Video CVBS	1 V_{PP} / 75 Ω	⊕⊙
Wh	- Audio L	0.5 V_{RMS} / 10 kΩ	⊕⊙
Rd	- Audio R	0.5 V_{RMS} / 10 kΩ	⊕⊙

6 - Aerial - In

-	- F-type (US)	Coax, 75 Ω	⊤

7 - Service Connector (ComPair)

1	- SDA-S	I^2C Data (0 - 5 V)	⊕⊖→
2	- SCL-S	I^2C Clock (0 - 5 V)	⊕
3	- Ground	Gnd	⏚

1.2.2 Side connections

8 - Cinch: Video CVBS - In, Audio - In

Ye	- Video CVBS	1 V_{PP} / 75 Ω
Wh	- Audio L	0.5 V_{RMS} / 10 kΩ
Rd	- Audio R	0.5 V_{RMS} / 10 kΩ

9 - S-Video (Hosiden): Video Y/C - In

1	- Ground Y	Gnd
2	- Ground C	Gnd
3	- Video Y	1 V_{PP} / 75 Ω
4	- Video C	0.3 V_{PP}P / 75 Ω

10 - Mini Jack: Audio Head phone - Out

Bk	- Head phone	32 - 600 Ω / 10 mW

1.3 Chassis Overview

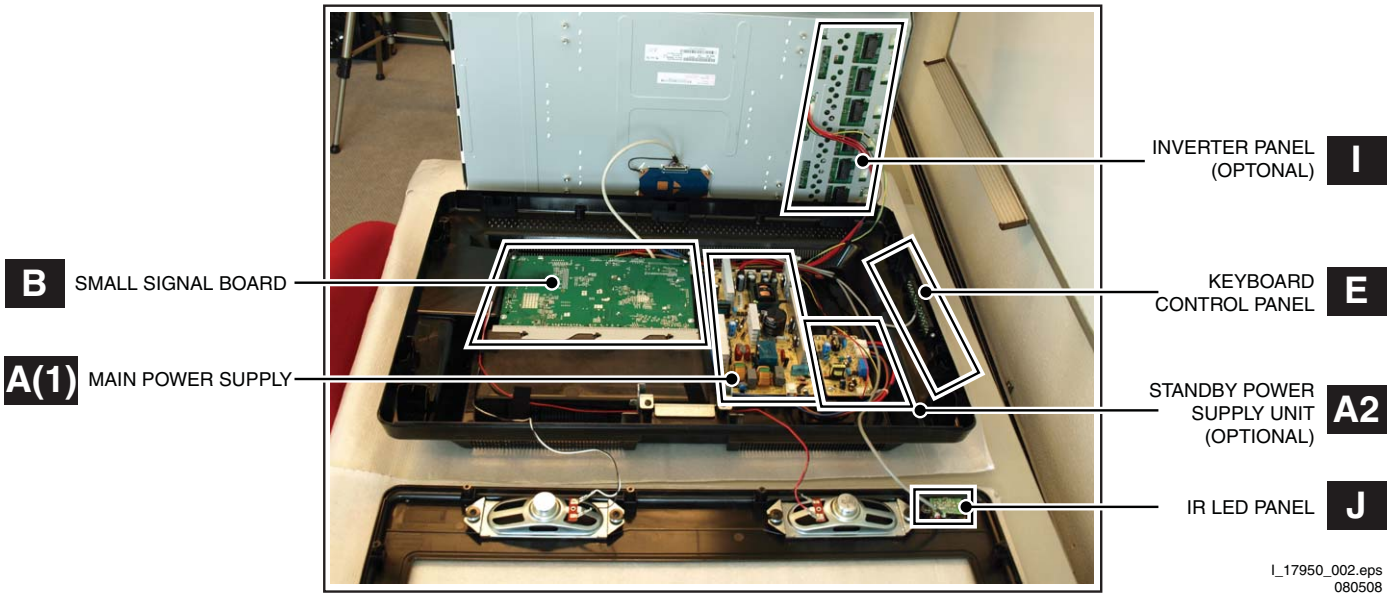

Figure 1-4 PWB/CBA locations

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

2.1 Safety Instructions
2.2 Warnings
2.3 Notes

2.1 Safety Instructions

Safety regulations require the following **during** a repair:

- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
  1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
  2. Set the Mains/AC Power switch to the “on” position (keep the Mains/AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
  4. Switch “off” the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched “on”.
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏚), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a color bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⊓) and without (⊼) aerial signal. Measure the voltages in the power supply section both in normal operation (⏻) and in stand-by (⏻). These values are indicated by means of the appropriate symbols.

2.3.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kΩ).
- Resistor values with no multiplier may be indicated with either an “E” or an “R” (e.g. 220E or 220R indicates 220 Ω).
- All capacitor values are given in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An “asterisk” (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Spare Parts List. Therefore, always check this list when there is any doubt.

2.3.3 BGA (Ball Grid Array) ICs

Introduction

For more information on how to handle BGA devices, visit this URL: *www.atyourservice.ce.philips.com* (needs subscription, not available for all regions). After log-in, select “Magazine”, then go to “Repair downloads”. Here you will find Information on how to deal with BGA-ICs.

BGA Temperature Profiles

For BGA-ICs, you **must** use the correct temperature-profile, which is coupled to the 12NC. For an overview of these profiles, visit the website *www.atyourservice.ce.philips.com* (needs subscription, but is not available for all regions)
You will find this and more technical information within the “Magazine”, chapter “Repair downloads”.
For additional questions please contact your local repair help desk.

2.3.4 Lead-free Soldering

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
  - To reach a solder-tip temperature of at least 400°C.
  - To stabilize the adjusted temperature at the solder-tip.
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilized at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch “off” unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly **to avoid** mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.

2.3.5 Alternative BOM identification

The **third digit** in the serial number (example: AG**2**B0335000001) indicates the number of the alternative B.O.M. (Bill Of Materials) that has been used for producing the specific TV set. In general, it is possible that the same TV model on the market is produced with e.g. two different types of displays, coming from two different suppliers. This will then result in sets which have the same CTN (Commercial Type Number; e.g. 28PW9515/12) but which have a different B.O.M. number.
By looking at the third digit of the serial number, one can identify which B.O.M. is used for the TV set he is working with. If the third digit of the serial number contains the number "1" (example: AG**1**B033500001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a "2" (example: AG**2**B0335000001), then the set has been produced according to B.O.M. no. 2. ***This is important for ordering the correct spare parts!***
For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26= 35 different B.O.M.s can be indicated by the third digit of the serial number.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 1 and 2 refer to the production centre (e.g. AG is Bruges), digit 3 refers to the B.O.M. code, digit 4 refers to the Service version change code, digits 5 and 6 refer to the production year, and digits 7 and 8 refer to production week (in example below it is 2006 week 17). The 6 last digits contain the serial number.

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Figure 2-1 Serial number (example)

2.3.6 Board Level Repair (BLR) or Component Level Repair (CLR)

If a board is defective, consult your repair procedure to decide if the board has to be exchanged or if it should be repaired on component level.
If your repair procedure says the board should be exchanged completely, do not solder on the defective board. Otherwise, it cannot be returned to the O.E.M. supplier for back charging!

2.3.7 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages**. While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

You can download this information from the following websites:
http://www.philips.com/support
http://www.p4c.philips.com

4. Mechanical Instructions

Index of this chapter:

4.1 Cable Dressing
4.2 Service Positions
4.3 Assy/Panel Removal
4.4 Set Re-assembly

Notes:

- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Follow the disassemble instructions in described order. They apply mostly to the 26" model unless otherwise specified, but the described method is comparable for the other screen sizes.

4.1 Cable Dressing

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Figure 4-1 Cable dressing (19" model)

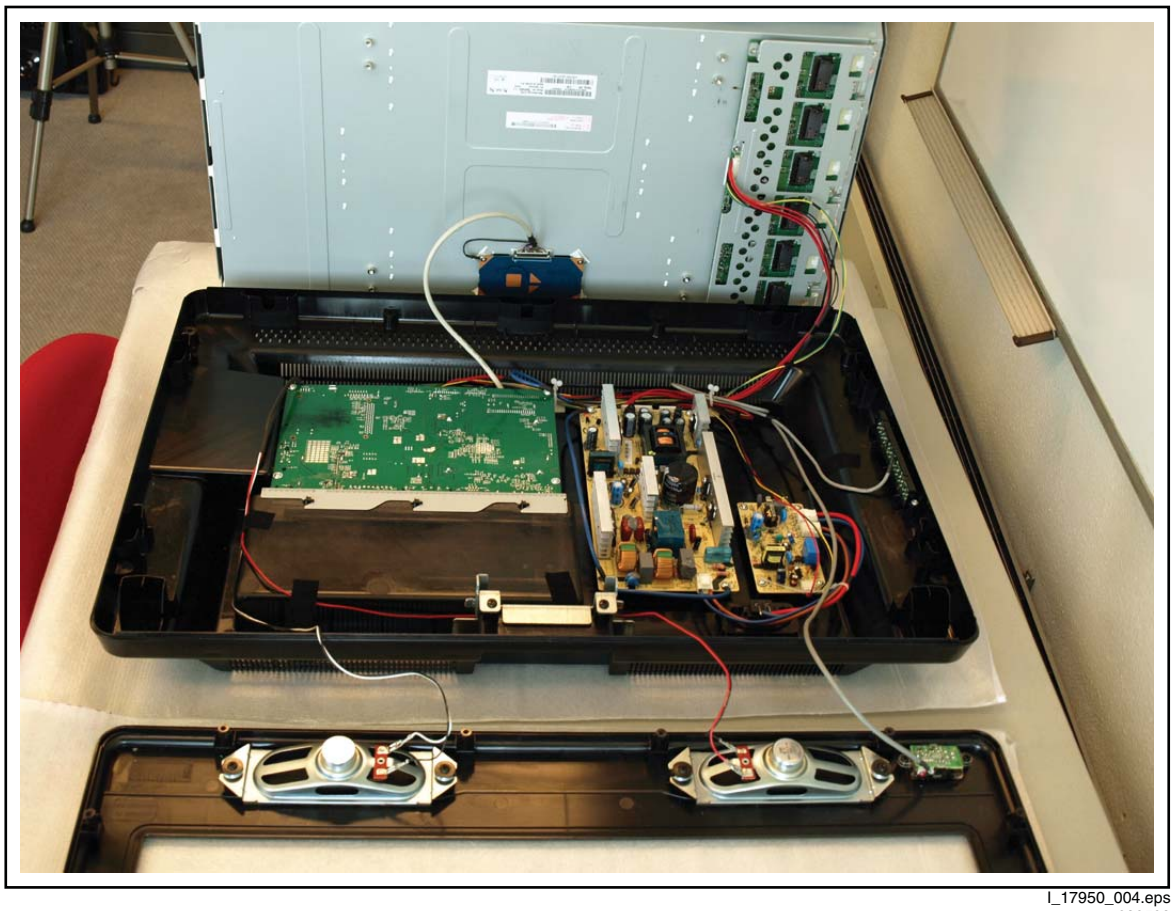

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Figure 4-2 Cable dressing (26" model)

4.2 Service Positions

For easy servicing of this set, there are a few possibilities created:

- The buffers from the packaging.
- Foam bars (created for Service).

4.2.1 Foam Bars

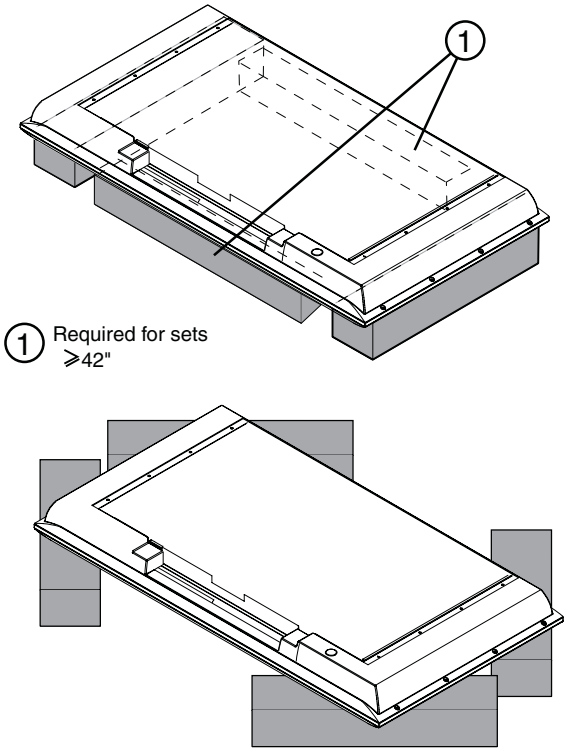

Figure 4-3 Foam bars

The foam bars (order code 3122 785 90580 for two pieces) can be used for all types and sizes of Flat TVs. See figure “Foam bars” for details. Sets with a display of 42” and larger, require **four** foam bars [1]. Ensure that the foam bars are always supporting the cabinet and **never** only the display.
Caution: Failure to follow these guidelines can seriously damage the display!
By laying the TV face down on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By placing a mirror under the TV, you can monitor the screen.

4.3 Assy/Panel Removal

4.3.1 Stand

1. Refer to next figure.
2. Place the TV set upside down on a table top, using the foam bars (see section “Service Position”).
3. Remove the screws that secure the stand and remove the stand.

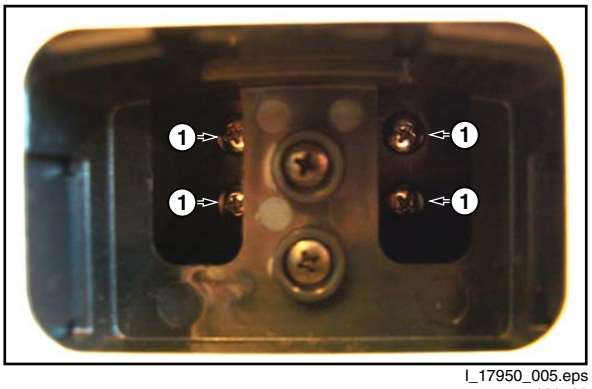

Figure 4-4 Stand

4.3.2 Rear Cover

Warning: Disconnect the mains power cord before you remove the rear cover.

1. Refer to next figures.
2. Place the TV set upside down on a table top, using the foam bars (see section “Service Positions”).
3. Remove the screws that secure the rear cover. The screws are located at the sides.
   Be careful: Now the rear cover could be lifted but the SSB and power supply panel(s) are mounted in the rear cover and still connected to the LCD panel and other boards. **Those cables should be released first.**
4. To release the LVDS cable lift the back cover a few centimetres and move it downwards the set. Now unplug the LVDS connector [2].
   Caution: be careful, as this is a very fragile connector!
5. Remove the screw [3].
6. Now the rear cover can be lifted to gain access to the speaker cables and the IR/LED panel cable. Release the connectors [4].

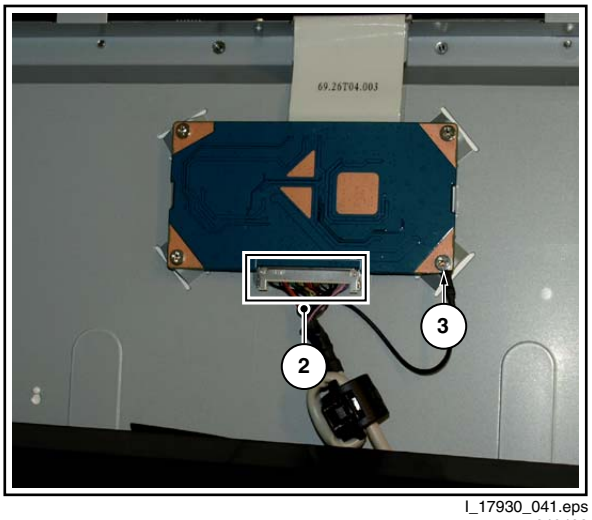

Figure 4-5 LVDS release

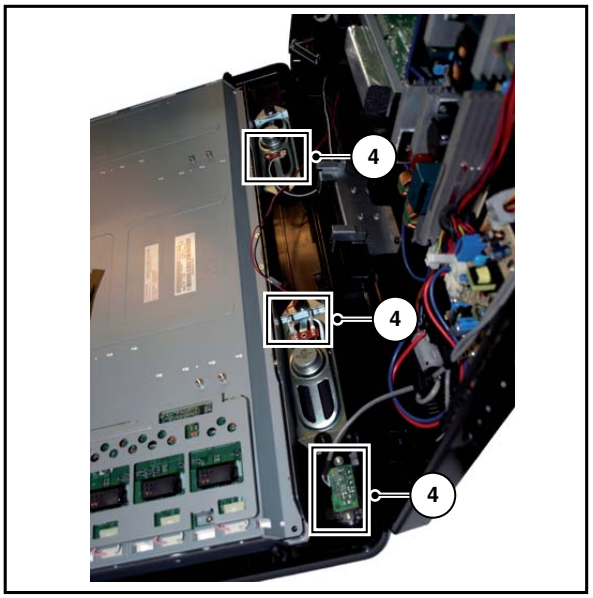

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Figure 4-6 Speaker and IR/LED panel cable release

4.3.3 Keyboard Control Board

1. Refer to next figure.
2. Unscrew two screws[1]
3. Unplug connector [2] and remove the board.

When defective, replace the whole unit

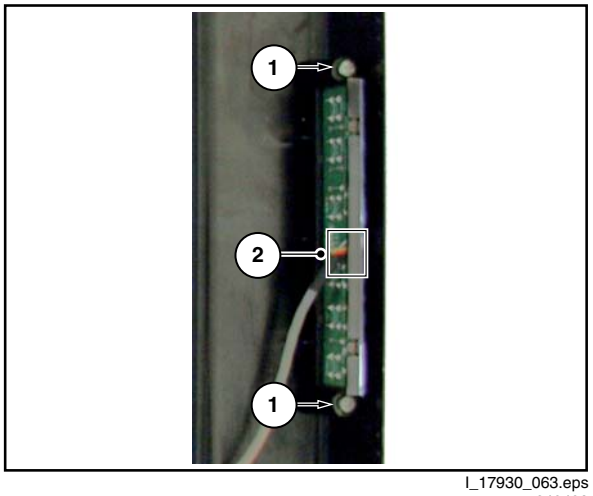

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Figure 4-7 Keyboard control board

4.3.4 IR/LED Board and Speakers

1. Refer to next figure.
2. Remove the screws [1] and remove the IR/LED board.
3. Remove the screws [2] and remove the speakers.

When defective, replace the whole unit.

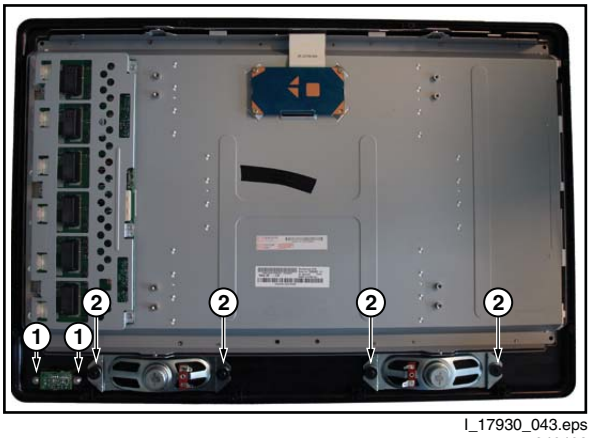

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Figure 4-8 IR/LED Board and Speakers

4.3.5 Power Supply Board

Due to different set executions this chassis is supplied with one or two power supply boards and figures may differ.
Caution: it is absolutely mandatory to remount all different screws and cables at their original position during re-assembly. Failure to do so may result in damaging the power supply.

1. Refer to next figure.
2. Unplug all the connectors [1].
3. Remove the fixation screws [2]
4. Remove the main power supply board.
5. Unplug all the connectors [3].
6. Remove the fixation screws [4]
7. Remove the stand-by power supply board.

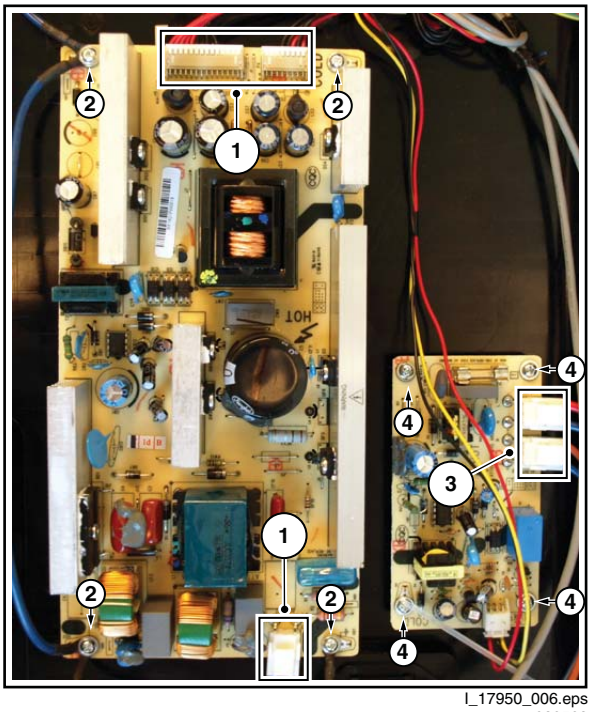

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Figure 4-9 Power Supply Unit(s)

4.3.6 Inverter Board (19" and 22" versions)

Due to different set executions this chassis some versions are supplied with an inverter board. Figures may differ.

1. Refer to next figure.
2. Unplug all connectors [1].
3. Release the clips [2]
4. Take out the inverter board.

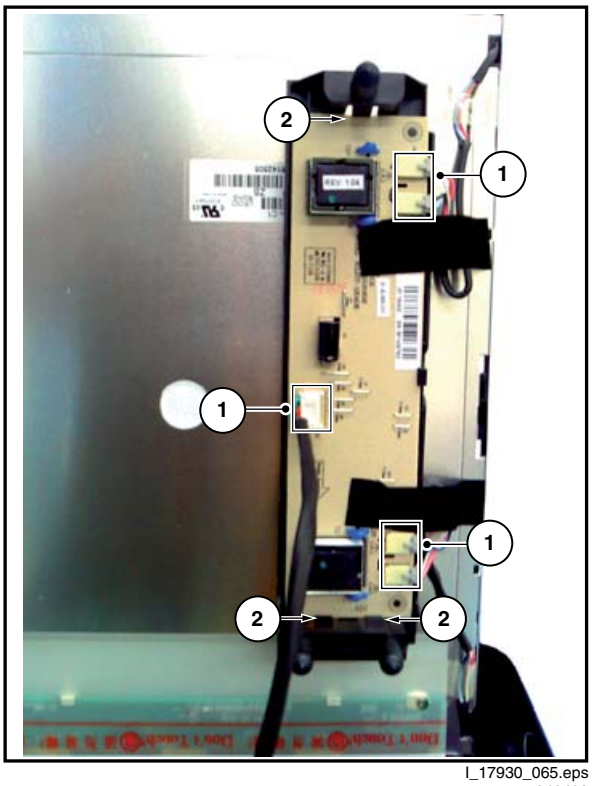

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Figure 4-10 Inverter Board

4.3.7 Small Signal Board (SSB)

Caution: it is absolutely mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the SSB.

Removing the SSB

1. See next figures.
2. Remove the screws [2] from the SSB.
3. On the **outside** of the set, **lift** the rear cover near the tuner connector approximately 3 mm in the indicated direction and keep it lifted, while
4. On the **inside** of the set, **slide** the metal plate in the indicated direction.
5. Gently lift the board from the rear cover.
6. Now unplug the LVDS connector [3].
   Caution: be careful, as this is a very fragile connector!
   Unplug the rest of the cables [4].

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Figure 4-11 SSB connector plate

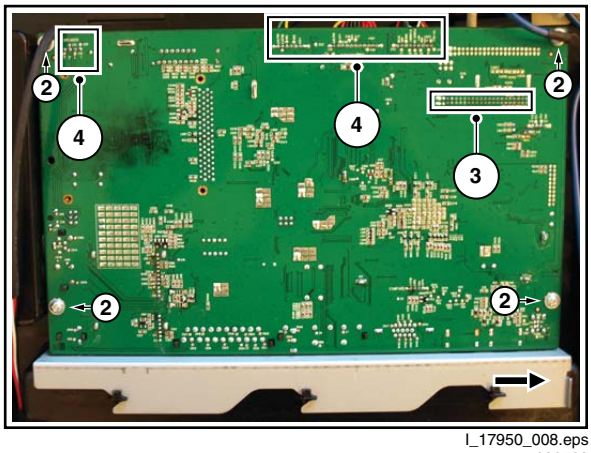

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Figure 4-12 SSB

4.4 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Notes:

- While re-assembling, make sure that all cables are placed and connected in their original position. See figure “Cable dressing”.
- Pay special attention not to damage the EMC foams at the SB shields. Make sure, that EMC foams are put correctly on their places.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Test Points
5.2 Service Mode
5.3 Error Codes
5.4 Fault Finding
5.5 Service Tools
5.6 Software Upgrading

5.1 Test Points

This chassis is NOT equipped with test points in the service printing. No test points are mentioned in the service manual.

5.2 Service Mode

5.2.1 Service Alignment Mode (SAM)

How to Enter

To enter SAM, use the following method:

- Press on the remote control the code "**062596**" directly followed by the "**INFO**" key.

After entering SAM, the following screen is visible, the values can be adjusted according to the requested (see Chapter 8).

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Figure 5-1 SAM menu

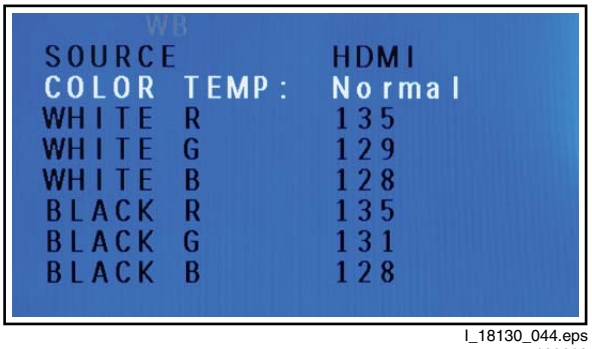

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Figure 5-2 SAM menu, White Balance, Normal

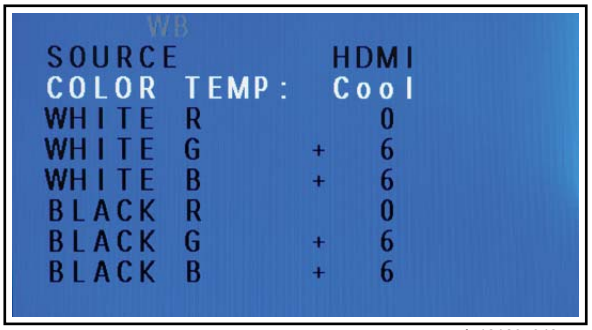

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Figure 5-3 SAM menu, White Balance, Cool

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Figure 5-4 SAM menu, White Balance, Warm

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Figure 5-5 SAM menu, Volume Curve

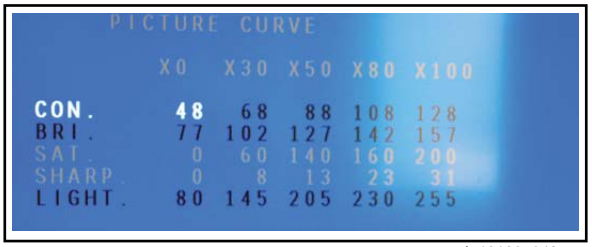

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Figure 5-6 SAM menu, Picture Curve

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Figure 5-7 SAM menu, Picture Mode, Natural

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Figure 5-8 SAM menu, Picture Mode, Personal

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Figure 5-9 SAM menu, Picture Mode, Rich

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Figure 5-10 SAM menu, Picture Mode, Soft

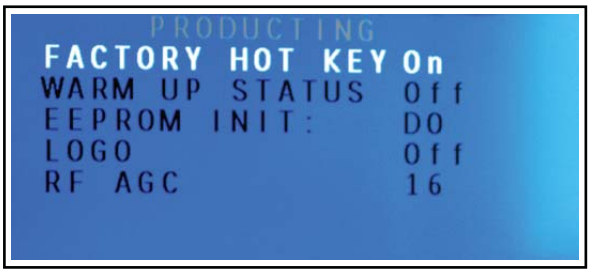

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Figure 5-11 SAM menu, Producting

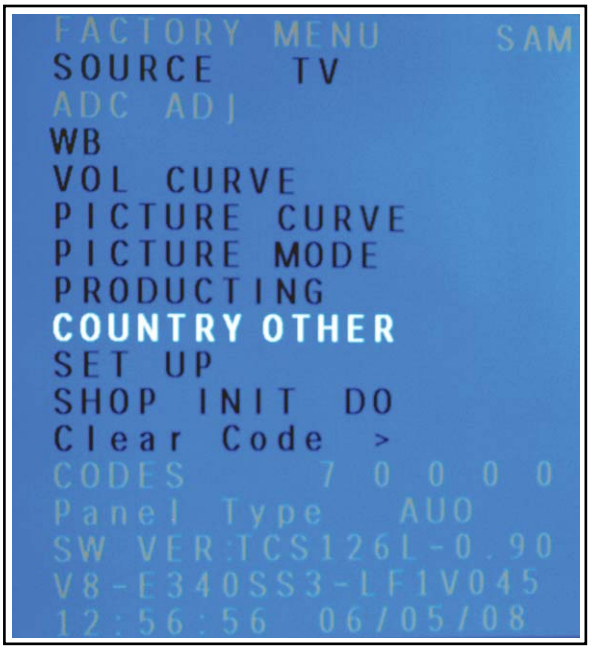

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Figure 5-12 SAM menu, Country

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Figure 5-13 SAM menu, Setup

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Figure 5-14 SAM menu, Shop Init Do

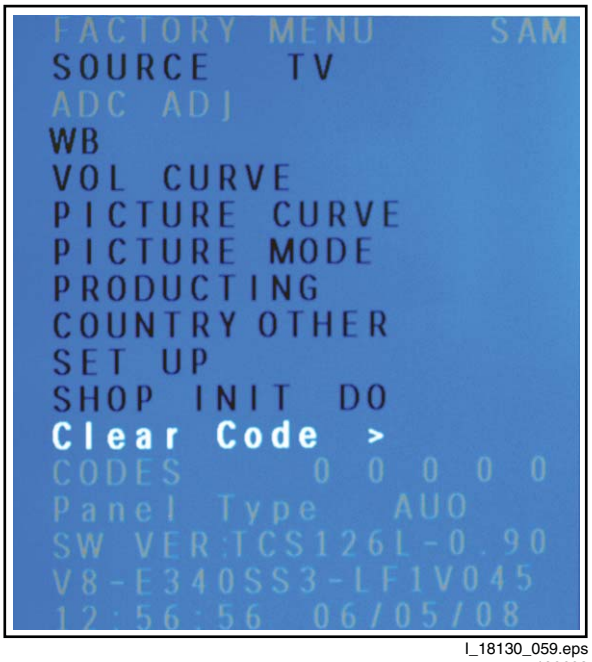

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Figure 5-15 SAM menu, Clear Code >

How to Exit

Press “MENU” on the RC-transmitter.

Factory Mode Descriptions

Item	Sub-Item	Description
SOURCE		Shift among sourcing via pressing Left & Right key
ADC ADJ		Only available in HDTV or PC mode
WB		White Balance Calibration setting
	SOURCE	Shift among sources
	COLOR TEMP	Normal, Warm, Cool
	WHITE R	R Gain, adjust manually or automatically
	WHITE G	G Gain, adjust manually or automatically
	WHITE B	B Gain, adjust manually or automatically
	BLACK R	R Shift, adjust manually or automatically
	BLACK G	G Shift, adjust manually or automatically
	BLACK B	B Shift, adjust manually or automatically
VOL CURVE		Volume Curve adjustment; X0, X10, X30, X50, X70, X90, X100 on for the user menu volume value of the 0, 10, 30, 50, 70, 90, 100. Only to adjust during production.
PICTURE CURVE		Analog Picture Curve adjustment; X0, X30, X50, X80, X100 on for the user menu picture value of the 0, 30, 50, 80, 100. Only to adjust during production.
	CON	Contrast Curve
	BRI	Brightness Curve
	SAT	Saturation Curve
	SHARP	Sharpness Curve
	LIGHT	Back light Curve
PICTURE MODE		Picture modes analog value can be adjusted in this page, including SOFT, NATURAL, BRIGHTE and PERSONAL

Item	Sub-Item	Description
PRODUCTING	FACTURY HOT KEY	Short-cut key to enter factory mode setting: GO BACK is the short-cut key if it is "ON". **Do remember to turn this "OFF" when the set is returned to the customer.**
	WARM UP STATUS	Aging Mode setting: "ON" means snow picture showing instead of blue background if there is no signal input. **Do remember to turn this "OFF" when the set is returned to the customer.**
	EEPROM INIT	EEPROM initialization: 1. When the first time to turn on the set, please enter this menu and initialize it. 2. Press Left/Right key and waiting for about 5 seconds until "OK" displayed, which means the set finishes the initialization. 3. Switch off AC power. 4. Power on the set again, the EEPROM will be initialized.
	LOGO	Always leave this setting to the value "OFF".
	RF AGC	RF Automatic Gain Control default at 16
COUNTRY		Select the correct country before doing a SHOP INIT, because it puts the set in virgin mode.
SET UP	POWER MODE LAST	This selects the last power on sequence used.
	POWER MODE STB	This will put the set in Stand-by whenever the power key is used to turn it on. The user now has to turn the set on with the remote control.
	POWER MODE ON	This will turn on the set whenever the power key is used to turn it on.
SHOP INIT DO		By selecting this, the outgoing factory initialization is selected. Always perform this at the end of a repair.
CLEAR CODE >		Clears the Error codes
CODES		Shows the last 5 error codes
PANEL TYPE		Shows the panel type (display only)
SW VER		Shows the software version
V8-...		Shows the BOM number
COMPILE TIME		Shows the time the software was compiled.

Virgin Settings
First the country should be set according to the following table:

Table 5-1 Country setting

CTN suffix	Country
/55	Other
/77	Argentina
/78	Brazil
/85	Mexico

Secondly select "SHOP INIT" from the SAM menu. Wait until finished and then turn "Off" the set. Now the set is put back to virgin settings according to the following table.

Table 5-2 Virgin settings

Setting	/55	/77	/78	/85
PQ Smart Mode	Rich	Rich	Rich	Rich
AQ Smart Mode	Movie	Movie	Movie	Movie
Sleep	Off	Off	Off	Off
Time	00:00	00:00	00:00	00:00
Start time	--:--	--:--	--:--	--:--
Stop time	--:--	--:--	--:--	--:--
Channel	2	2	2	2
Child lock	Off	Off	Off	Off
Parental lock	Off	Off	Off	Off
Closed caption	Off	Off	Off	Off
RF Channel	2	9	4	2
Volume	30	30	30	30
Screen ratio	16 : 9	16 : 9	16 : 9	16 : 9
OSD language	Spanish	Spanish	Portuguese	Spanish

5.2.2 Customer Service Mode (CSM)

Purpose
When a customer is having problems with his TV-set, he can call his dealer or the Customer Help desk. The service technician can then ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severity of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer. The CSM is a read only mode; therefore, modifications in this mode are not possible.

How to Activate CSM
Key in the code "**123654**" via the standard RC transmitter.

Contents of CSM

CSM
1 MODEL 19PFL3403/77
2 PROD S/N See TypePlate
3 SW ID TCS126L-1.01
4 CODES 0 0 0 0 0
5 SIGNAL PRESENT NO
6 SYSTEM NONE
7 SOUND NONE
8 HDCP KEYS VALID
9 HDMI INPUT FORMAT NONE
10 HDMI AUDIO INPUT NO

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Figure 5-16 CSM Menu

Menu Explanation
1. **MODEL** Type number and region code.
2. **PROD S/N** Production code will have 14 characters + 2 reserved (total 16 characters).
3. **SW ID** Software cluster and version is displayed (TC = TCL, 1 = Chassis Number, 26 = Screen size, L = Latam, 0.90 = software version).
4. **CODES** Error buffer contents.
5. **SIGNAL PRESENT** Presence of RF signal.
6. **SYSTEM** Color system.
7. **SOUND** Sound system (Mono/Stereo/SAP).
8. **HDCP KEYS** Shows Valid or invalid HDCP key when HDMI connected. Else blank.
9. **HDMI INPUT FORMAT** Shows the HDMI input format.
10. **HDMI AUDIO INPUT** HDMI audio input HDMI audio stream detection. YES = Audio stream detected. NO = No Audio (for example when DVI format is used)

How to Exit
Press "MENU" on the RC-transmitter.

5.2.3 Blinking LED Procedure

The software is capable of identifying different kinds of errors. Because it is possible that more than one error can occur over time, an error buffer is available which is capable of storing the last five errors that occurred. This is useful if the OSD is not working properly.

Errors can also be displayed by the blinking LED procedure. The method is to repeatedly let the front LED pulse with as many pulses as the error code number, followed by a period of 1.5 seconds in which the LED is "off". Then this sequence is repeated.

Any RC command terminates the sequence. Error code LED blinking is in white color.
Example: the contents of the error buffer is "013 007 000 000 000".
After entering SDM, the following occurs:

- 1 long blink of 5 seconds to start the sequence
- 1 medium blink of 3 seconds and then 3 short blinks followed by a pause of 1.5 seconds
- 7 short blinks followed by a pause of 1.5 seconds
- 1 long blink of 1.5 seconds to finish the sequence.

The sequence starts again with 12 short blinks.

5.3 Error Codes

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

Basically there are six kind of errors:

Code	Description	Detection method	Type
0	no error	-	-
1	reserved	-	-
2	5V failure protection	Power down	Protection + blinking
3	µP Control	I^2C-bus	Error log + blinking
4	General I^2C bus Error	I^2C-bus	Protection + blinking
5	reserved	-	-
6	System EEPROM	I^2C-bus	Protection + blinking
7	Tuner	I^2C-bus	Error log + blinking
8	HDCP EEPROM	I^2C-bus	Error log + blinking

5.4 Fault Finding

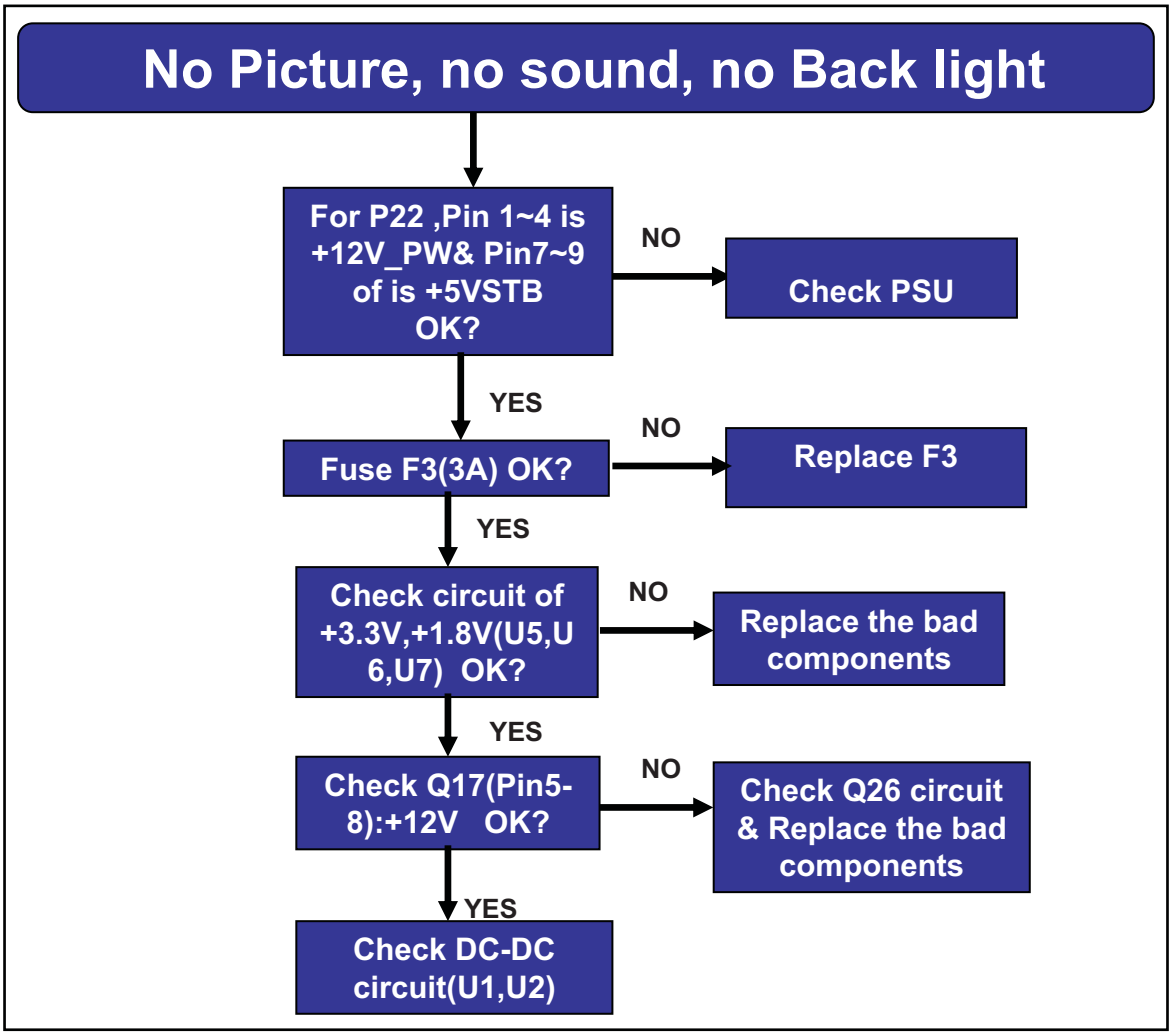

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Figure 5-17 No Picture, No sound, no Back light (19" sets)

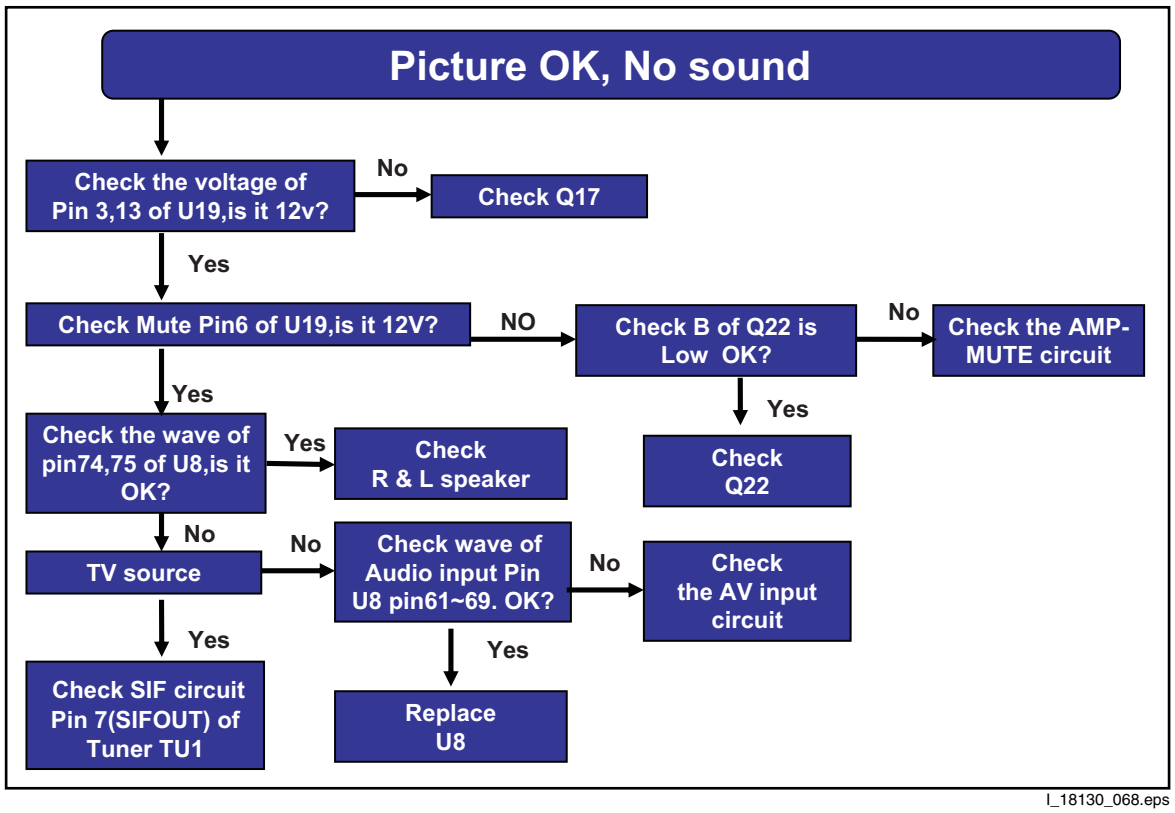

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Figure 5-18 Picture OK, No sound (19" sets)

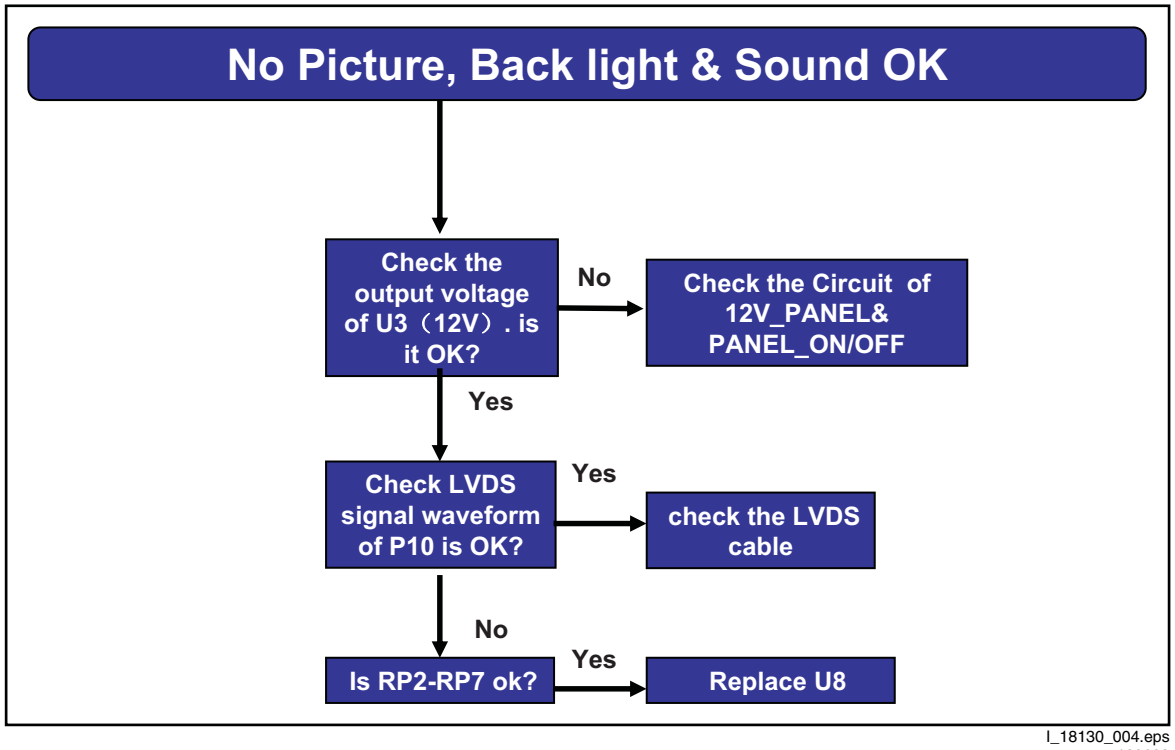

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Figure 5-19 No Picture, Back light & Sound OK (19" and 26" sets)

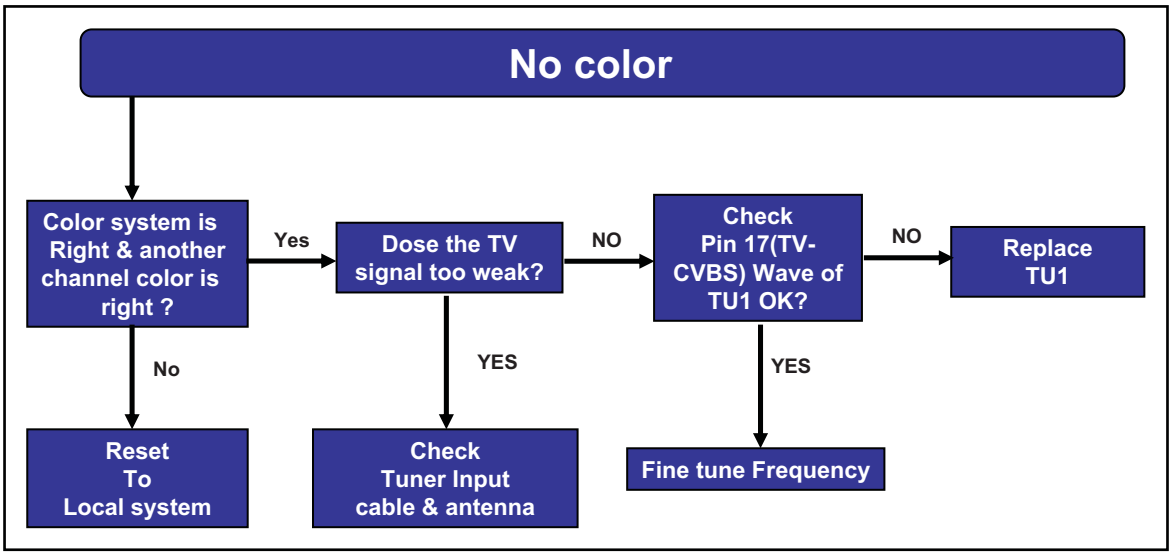

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Figure 5-20 No color (19" and 26" sets)

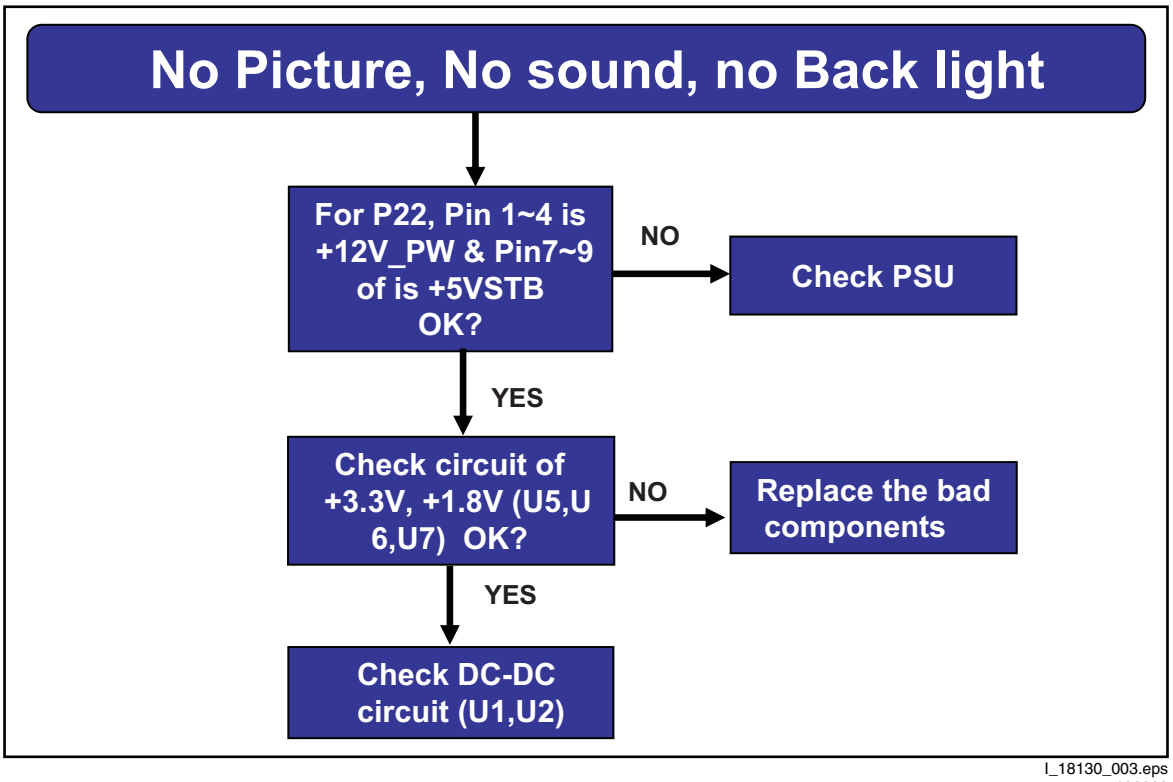
No Picture, No sound, no Back light
For P22, Pin 1~4 is +12V_PW & Pin7~9 of is +5VSTB OK?
NO
Check PSU
YES
Check circuit of +3.3V, +1.8V (U5,U6,U7) OK?
NO
Replace the bad components
YES
Check DC-DC circuit (U1,U2)

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Figure 5-21 No Picture, No sound, no Back light (26" sets)

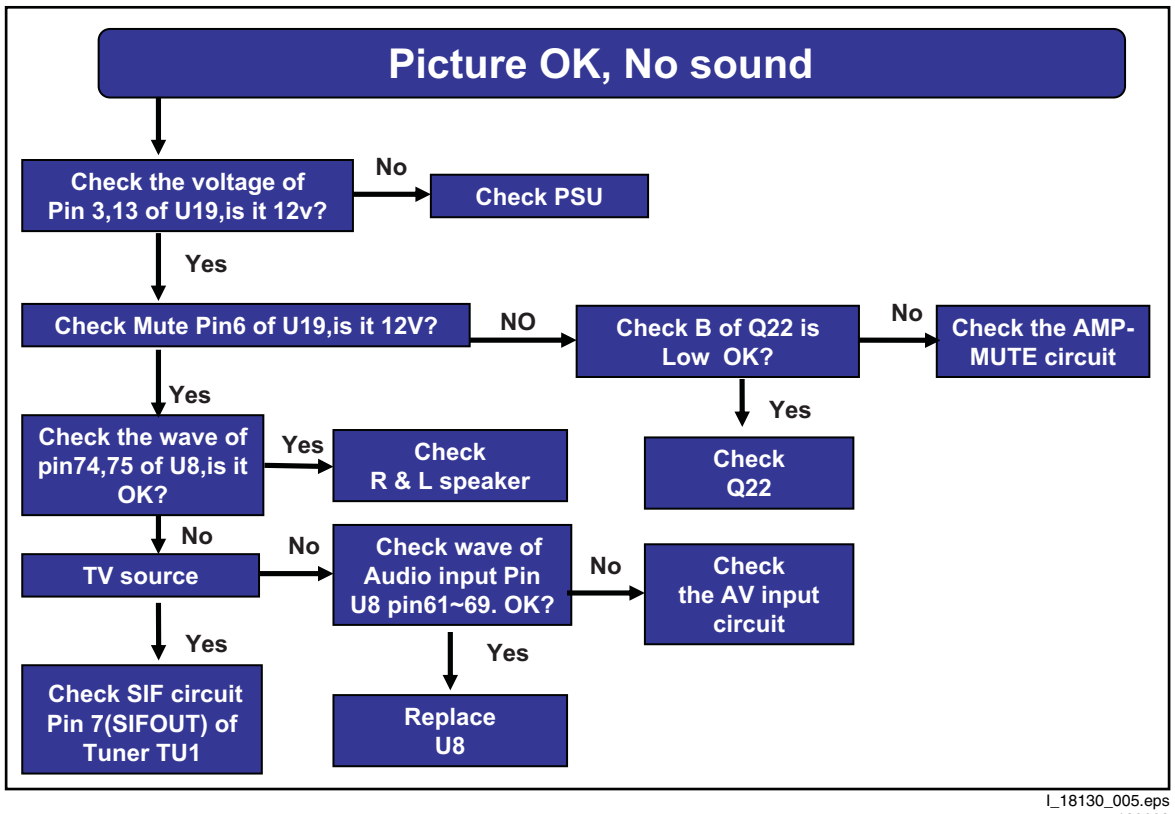


Figure 5-22 Picture OK, No sound (26" sets)

5.5 Service Tools

5.5.1 ComPair

Introduction

ComPair (Computer Aided Repair) is a Service tool for Philips Consumer Electronics products. and offers the following:

1. ComPair helps you to quickly get an understanding on how to repair the chassis in a short and effective way.
2. ComPair allows very detailed diagnostics and is therefore capable of accurately indicating problem areas. You do not have to know anything about I²C or UART commands yourself, because ComPair takes care of this.
3. ComPair speeds up the repair time since it can automatically communicate with the chassis (when the uP is working) and all repair information is directly available.
4. ComPair features TV software upgrade possibilities.

Specifications

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The (new) ComPair II interface box is connected **to the PC** via an USB cable. For the TV chassis, the ComPair interface box and the TV communicate via a bi-directional cable via the service connector(s).

How to Connect

This is described in the ComPair chassis fault finding database.

Caution: It is compulsory to connect the TV to the PC as shown in Figure “ComPair II interface connection” (with the ComPair interface in between), as the ComPair interface acts as a level shifter. If one connects the TV directly to the PC (via UART), ICs will be blown!

How to Order

ComPair II order codes:

- ComPair II interface: 3122 785 91020.
- For SW see Philips service website.
- ComPair UART interface cable: 3122 785 75051.
- Software Upgrade VGA interface cables: 3122 785 90004 and 3122 785 09269.

Note: If you encounter any problems, contact your local support desk.

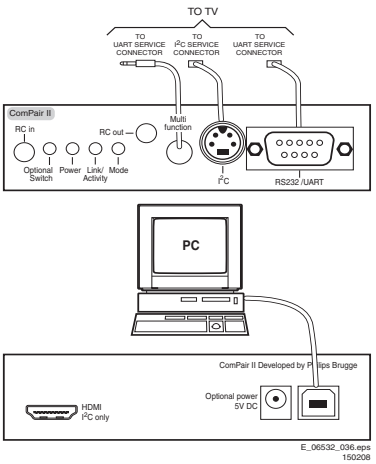


Figure 5-23 ComPair II interface connection

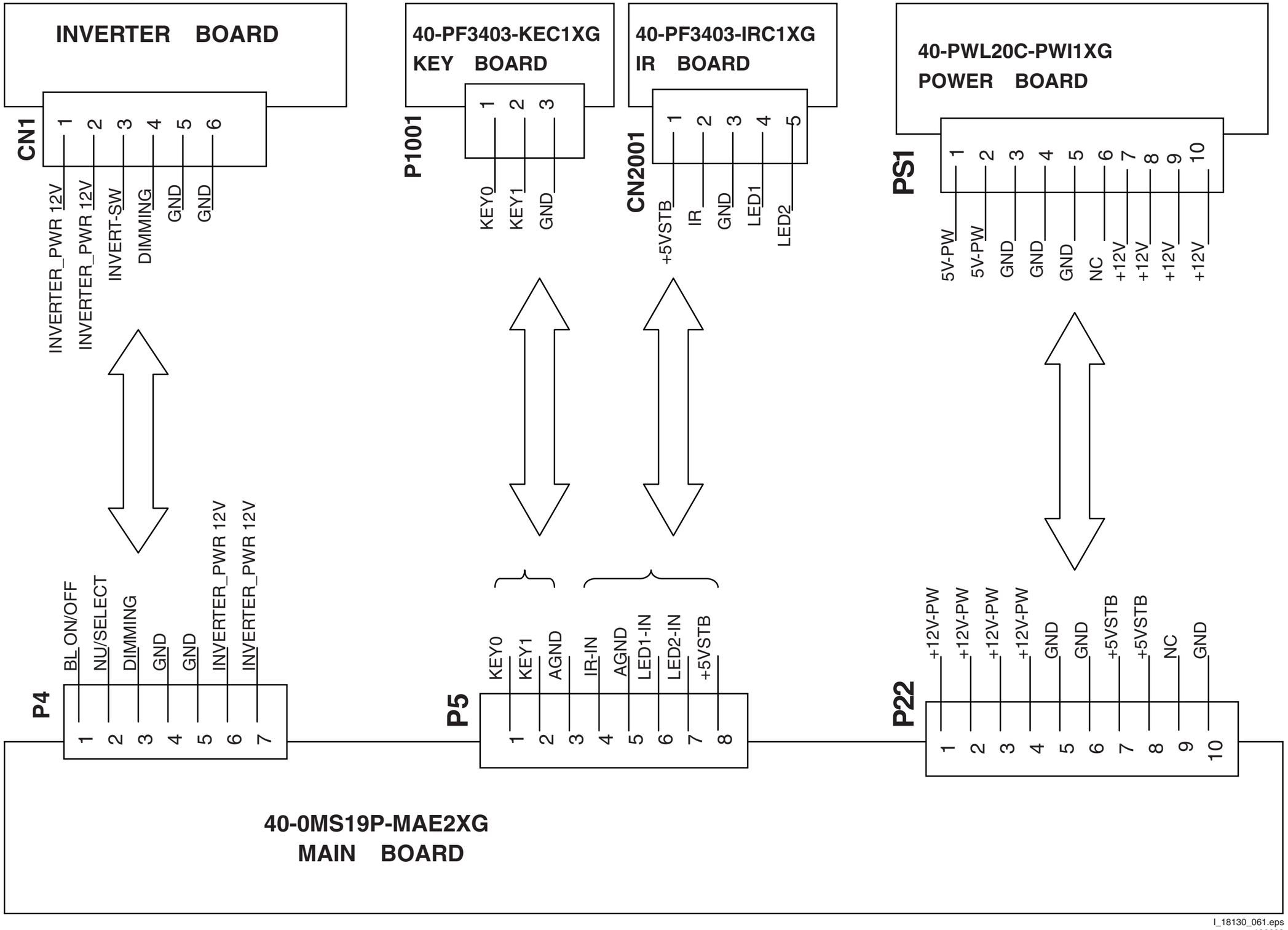
5.6 Software Upgrading

5.6.1 Introduction

Software upgrading can be done by ComPair. This allows to replacement of the software image.

6. Block Diagrams, Test Point Overview, and Waveforms

Wiring Diagram of Connector for MS19-PH 19"



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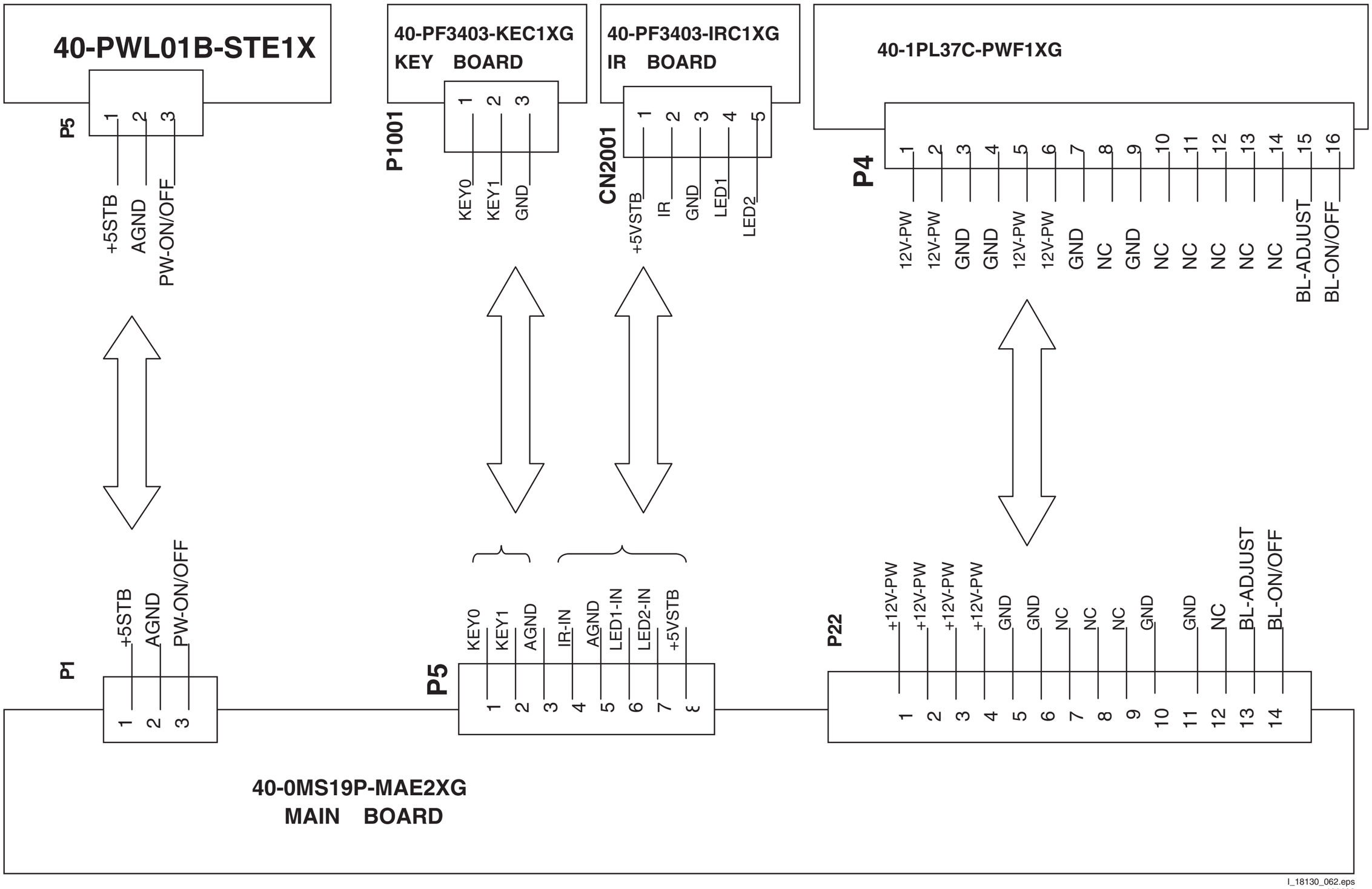
Wiring Diagram of Connector for MS19-PH 26"



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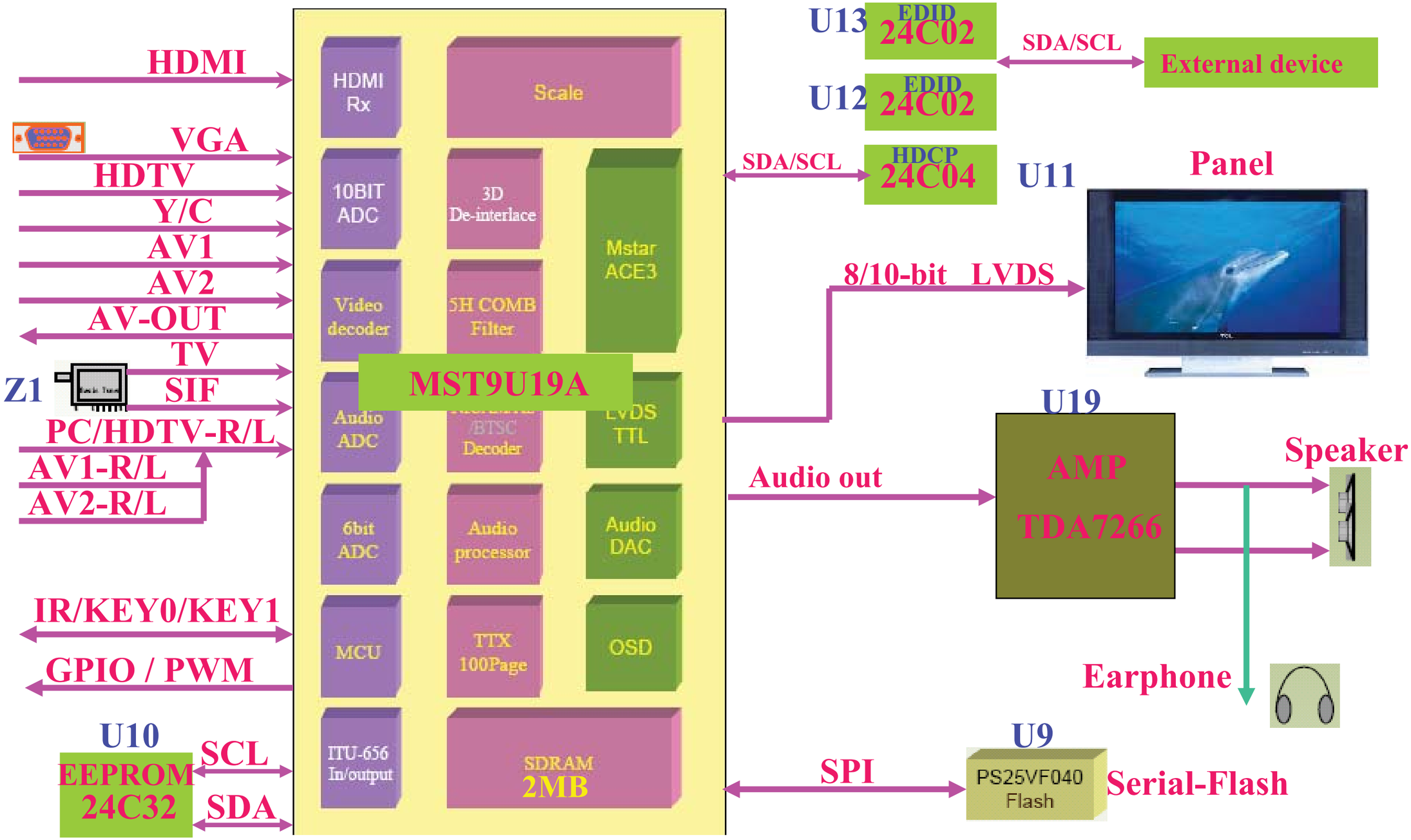
Block Diagram MS19P Chipset

MS19P Chipset Block Diagram



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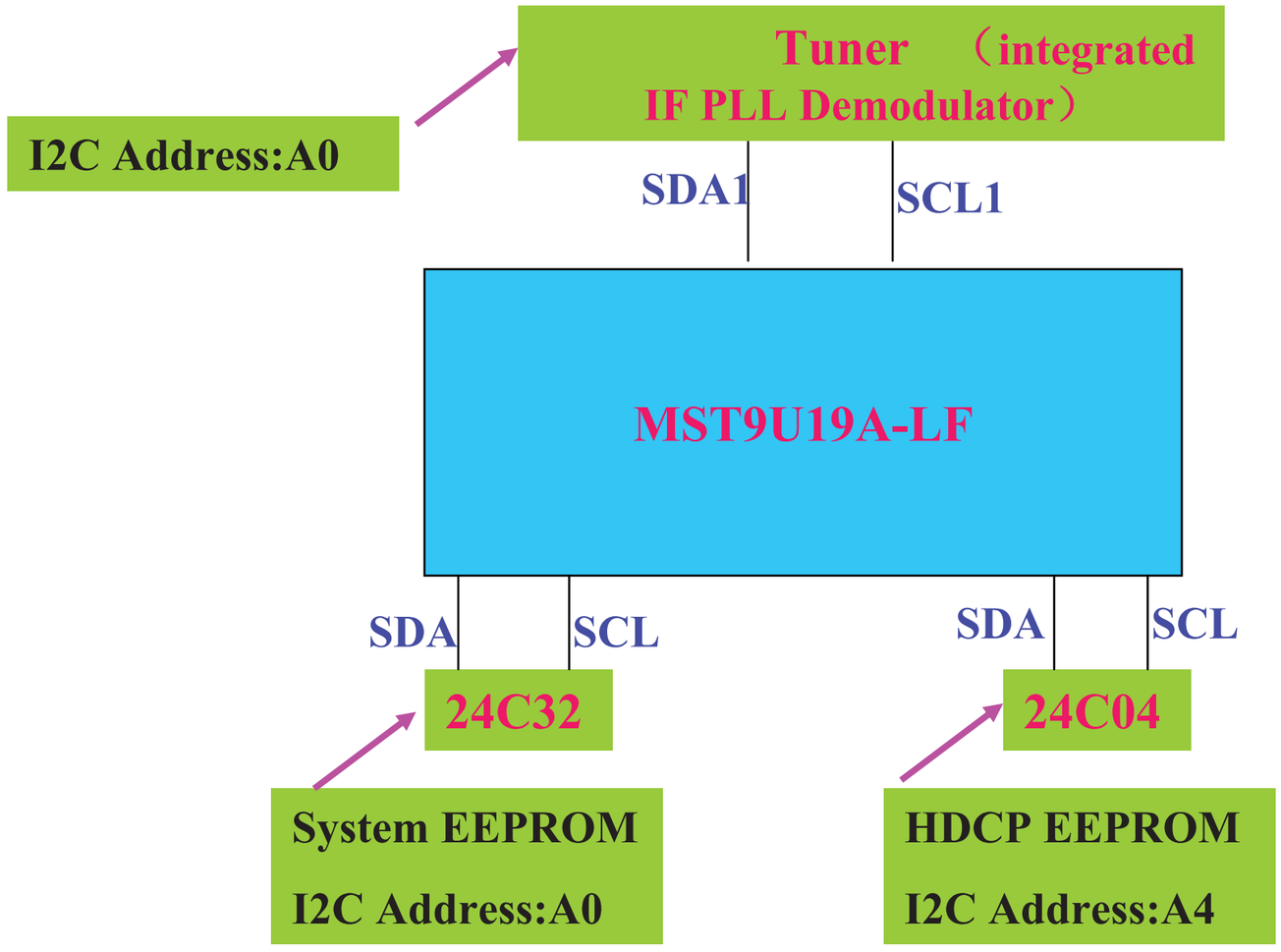
I2C overview

I2C Device Block Diagram



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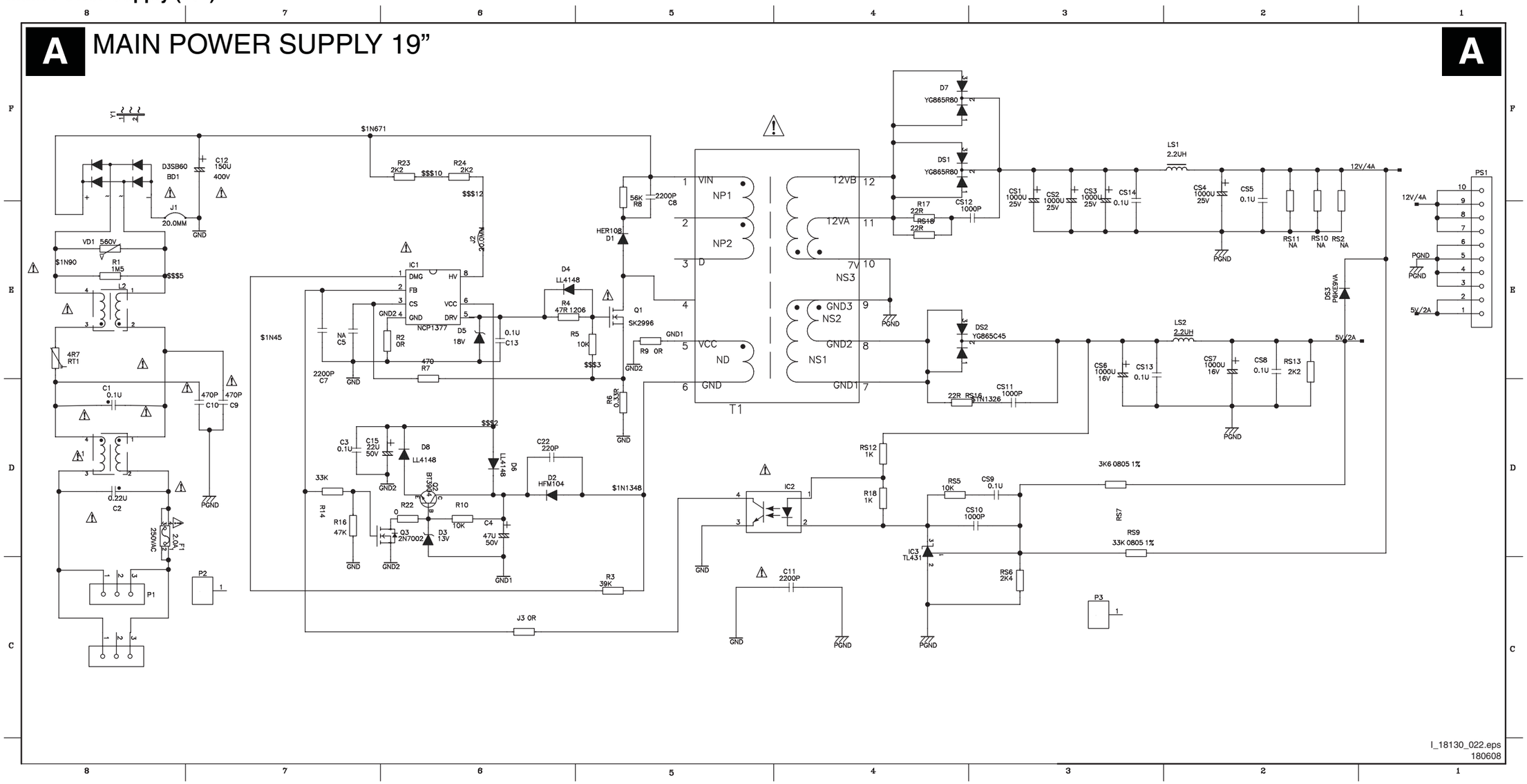
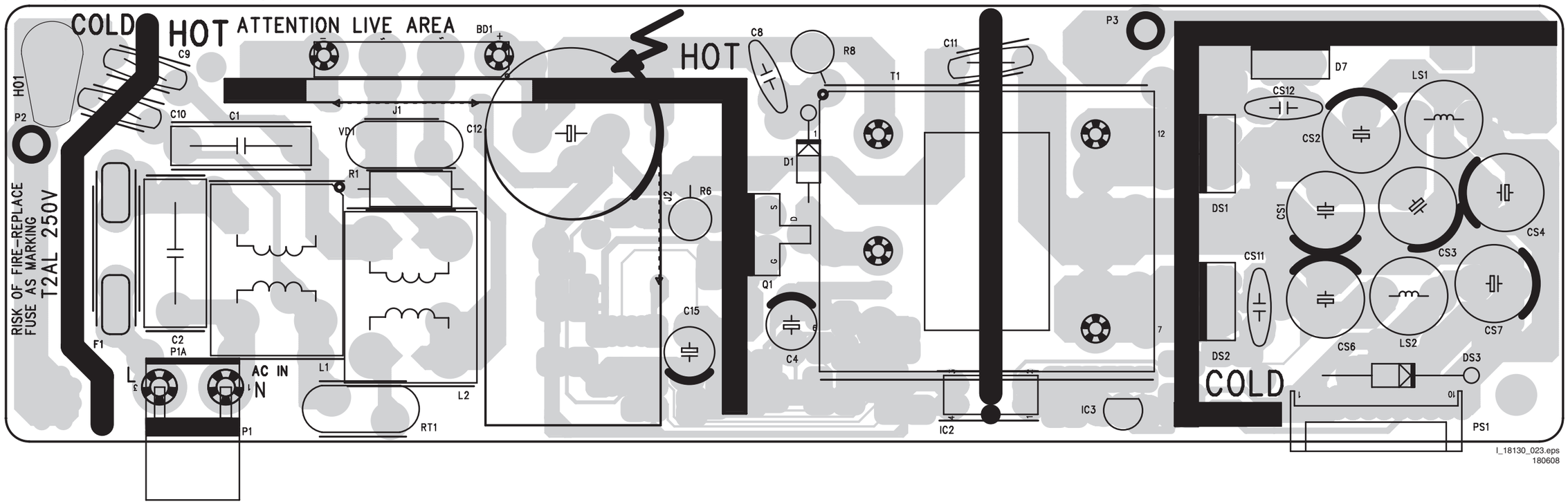
7. Circuit Diagrams and PWB Layouts

Main Power Supply (19")



Layout Main Power Supply (19") (Top Side)



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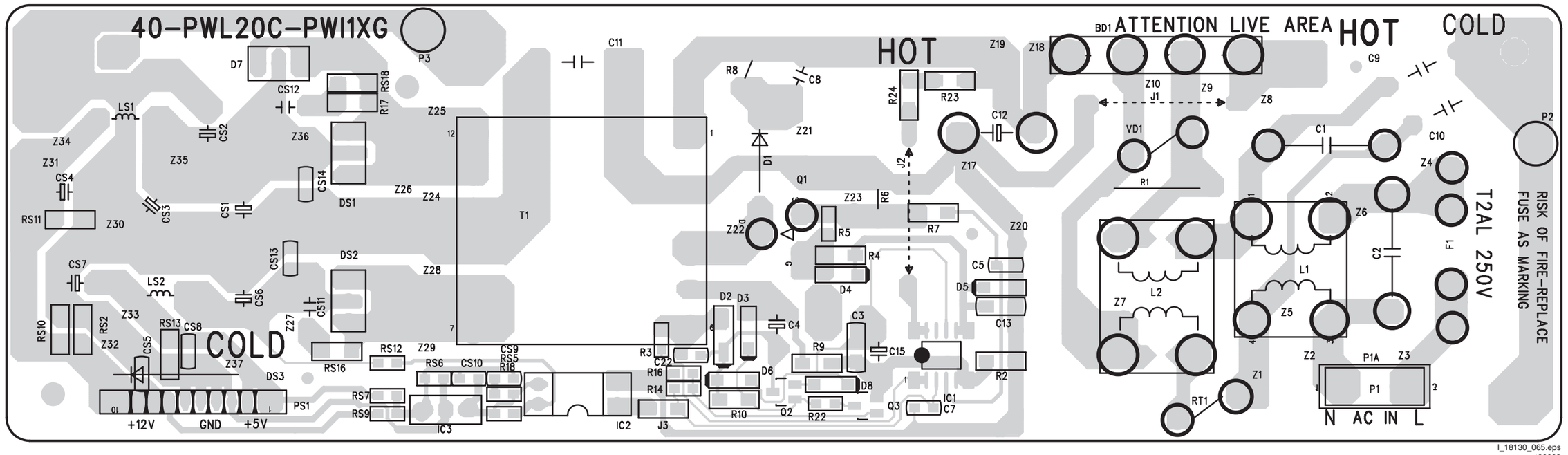
Layout Main Power Supply (19") (Bottom Side)



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Main Power Supply (26")

A1 MAIN POWER SUPPLY 26”

A1

P2
P1
F1
1.0A
250VAC
RT1
10R
RV1
560V
C13
0.068U
LF1
36-LIF075-XX0
D7
1N4007
D2
1N4007
D1
1N4007
D3
1N4007
C3
10U
400V
PGND
K1
D16
1N4148
Q4
SC1815
R3
5K1
R2
22K
C6
0.1U
P5
P_ON
5V
AGND
R27
220K
C11
1000P
1KV
U1
FSQ110
SOURCE1
SOURCE2
FB
VDD
DRAIN4
DRAIN3
DRAIN2
DRAIN1
R26
56K
D6
1H8
LB1
VAL?
T1
D4
SR160
L1
15UH
C17
100U
16V
C22
100U
16V
C1
22U
50V
D5
FR102
R1
2R2
R6
100R
R7
2K2
R31
10K
C20
0.1U
R29
2K2
U3
PS2561
U5
TL431
R30
2K
C18
470P
C7
0.022U
Z2
79C15V
D23
FR102
R8
2R2
R10
2R2
C25
0.022U
Z3
79C15V
C24
22U
50V

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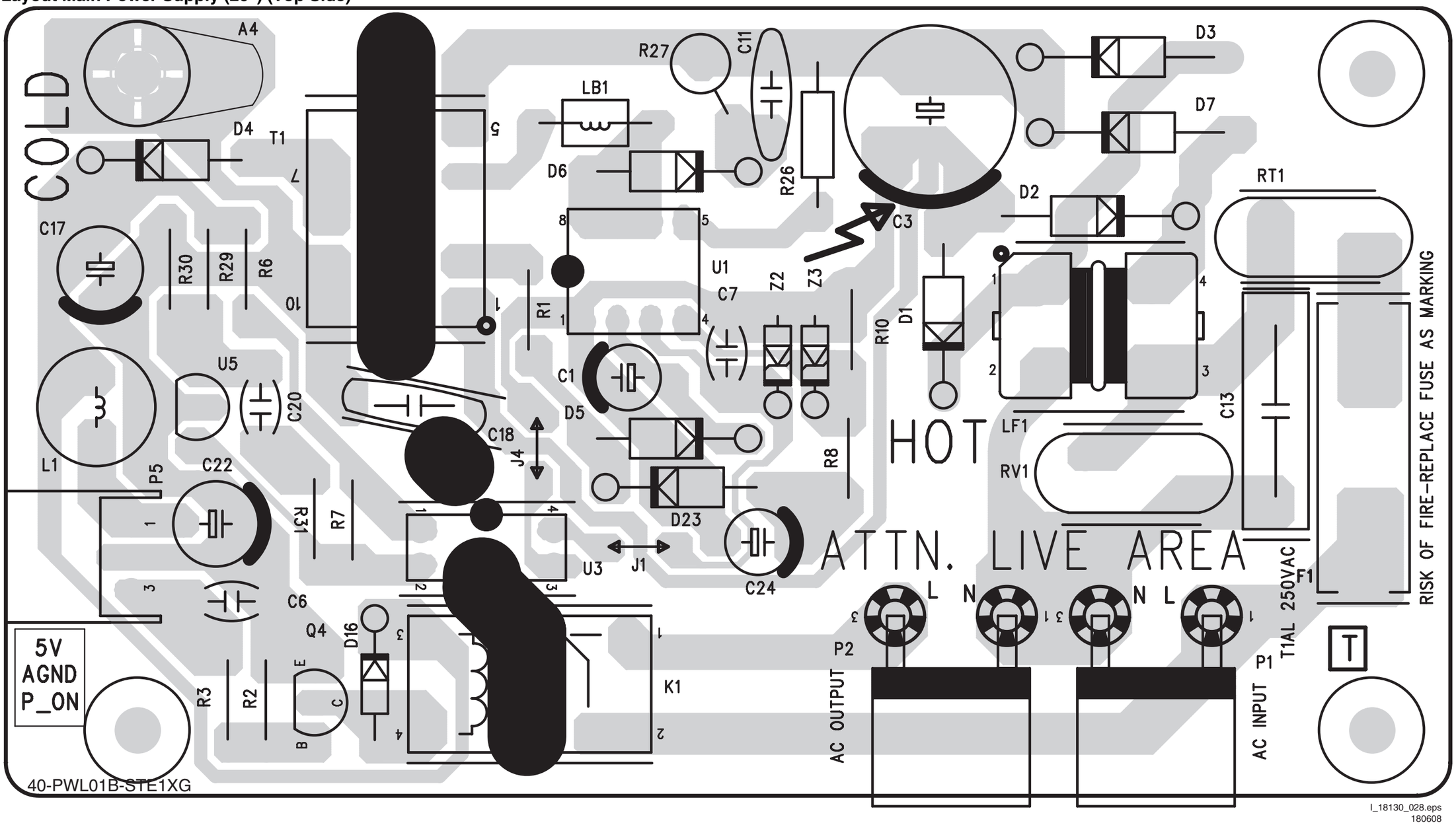
Layout Main Power Supply (26") (Top Side)



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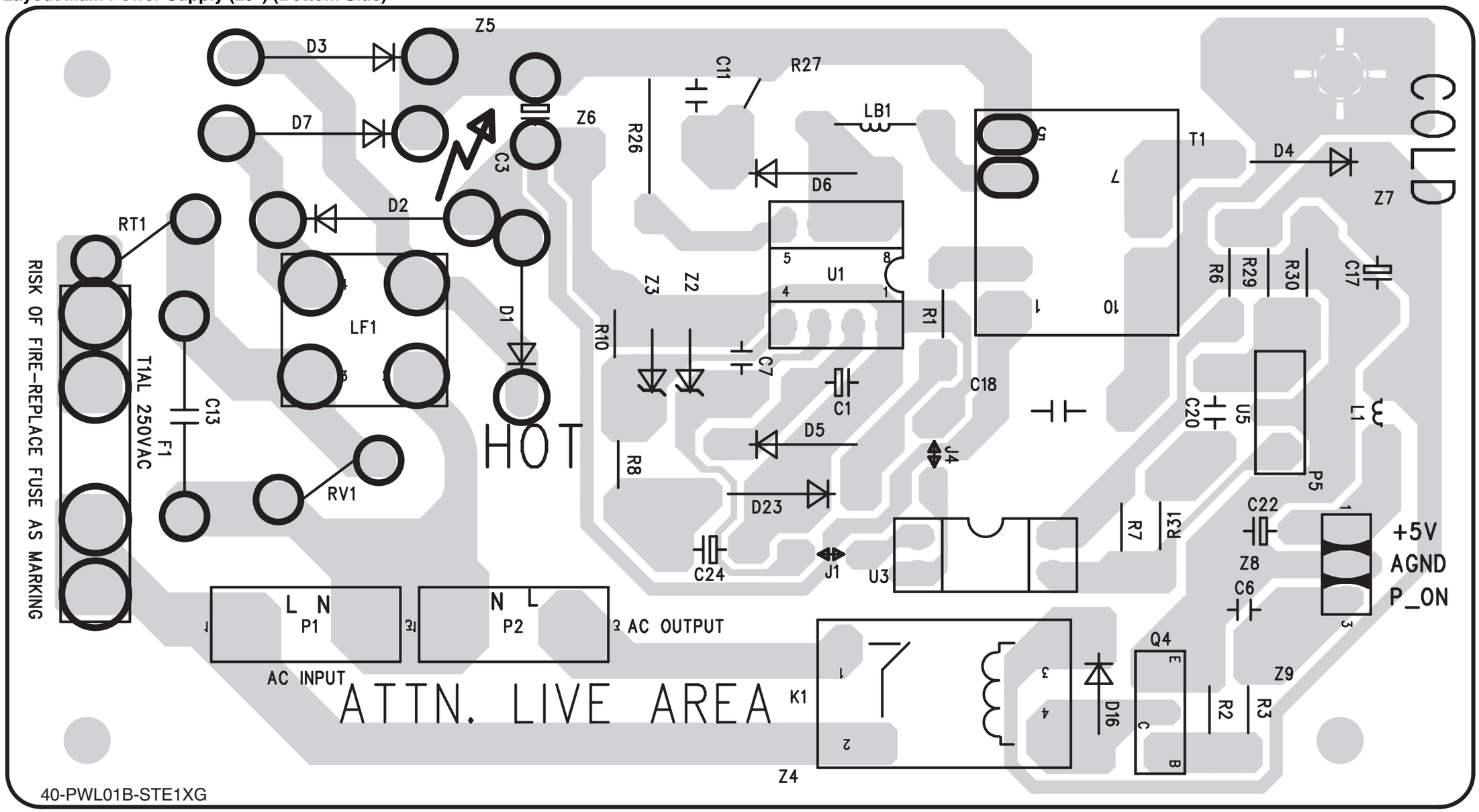
Layout Main Power Supply (26") (Bottom Side)



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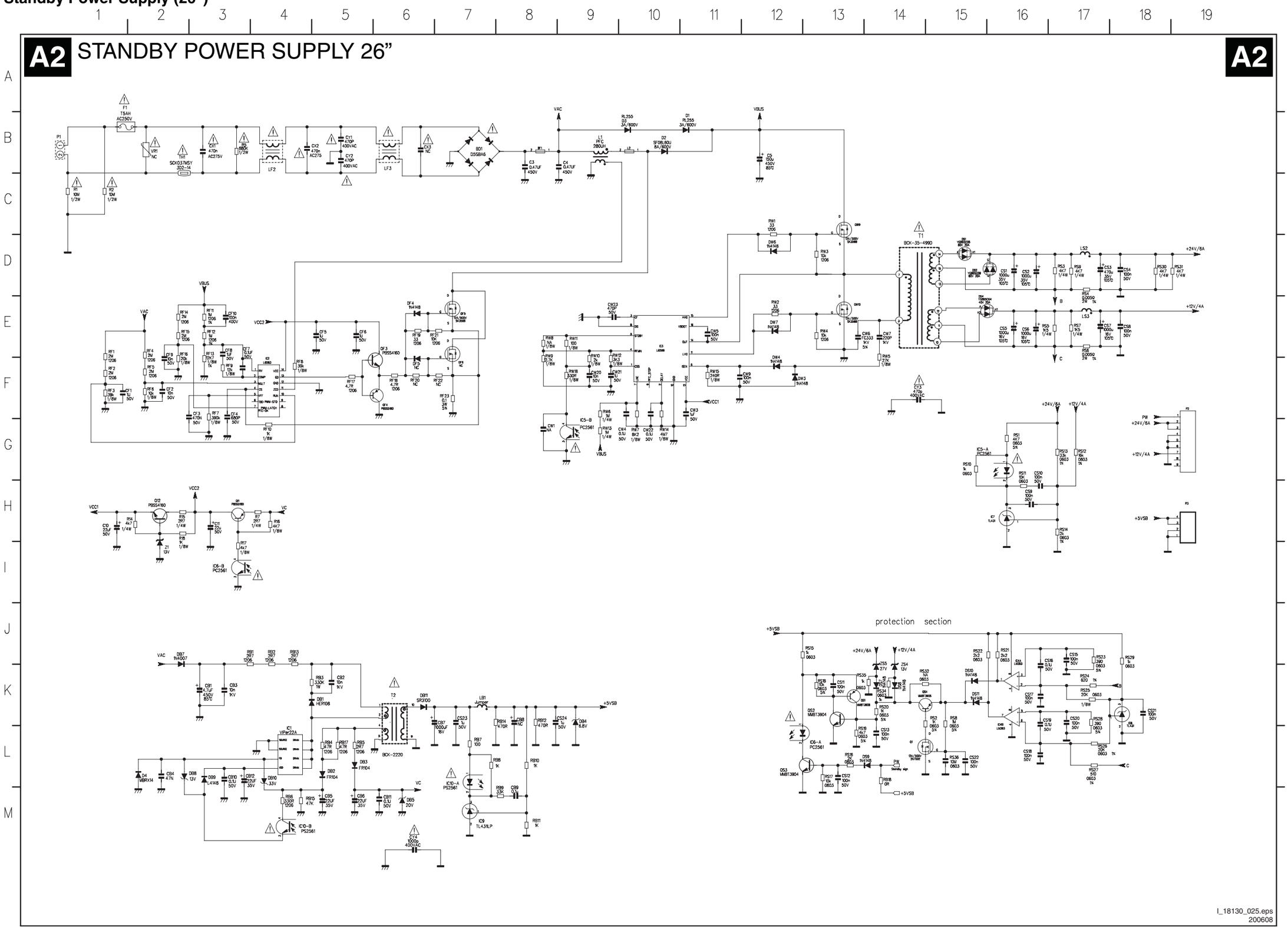
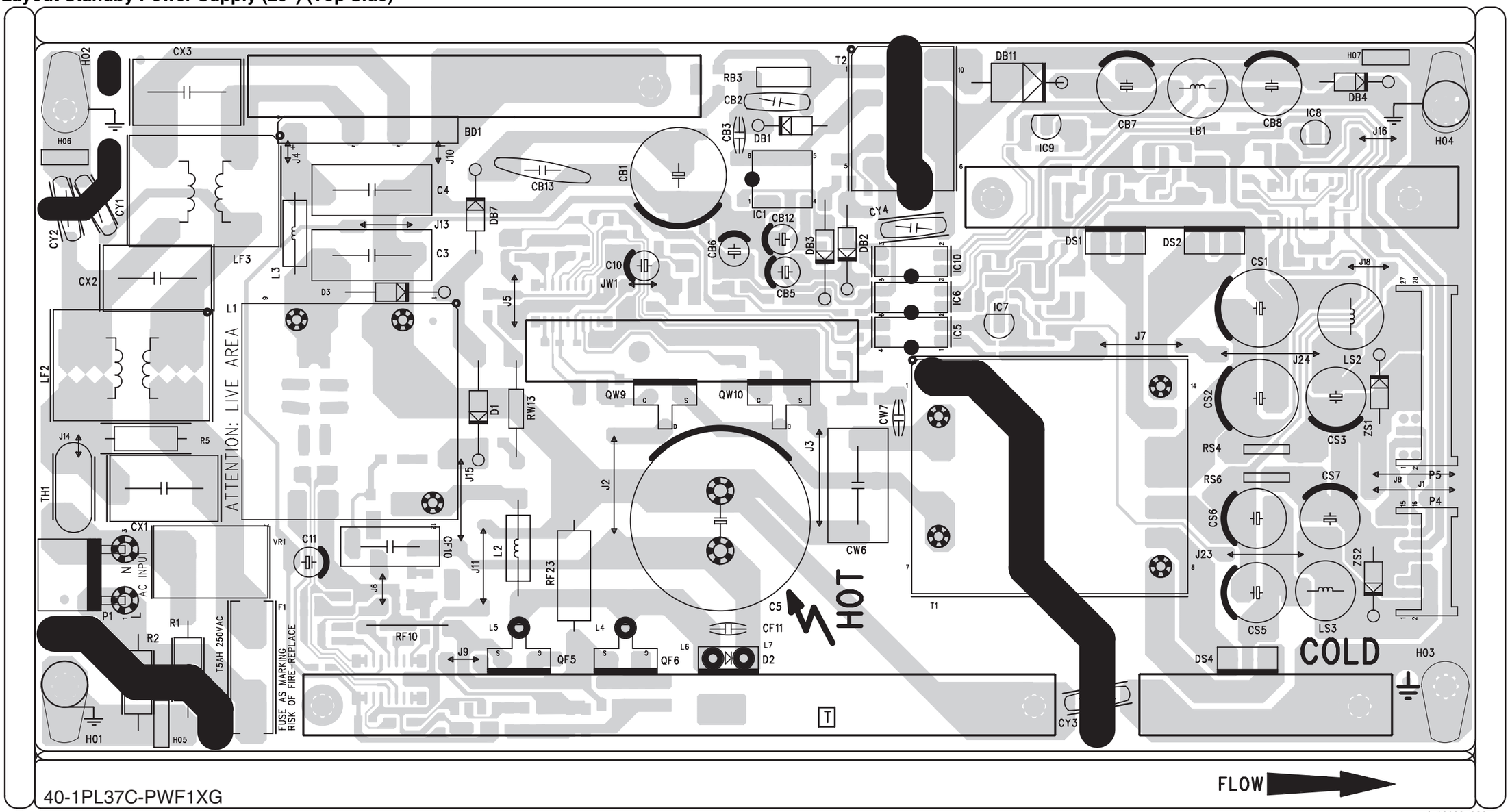
Standby Power Supply (26")



Layout Standby Power Supply (26") (Top Side)



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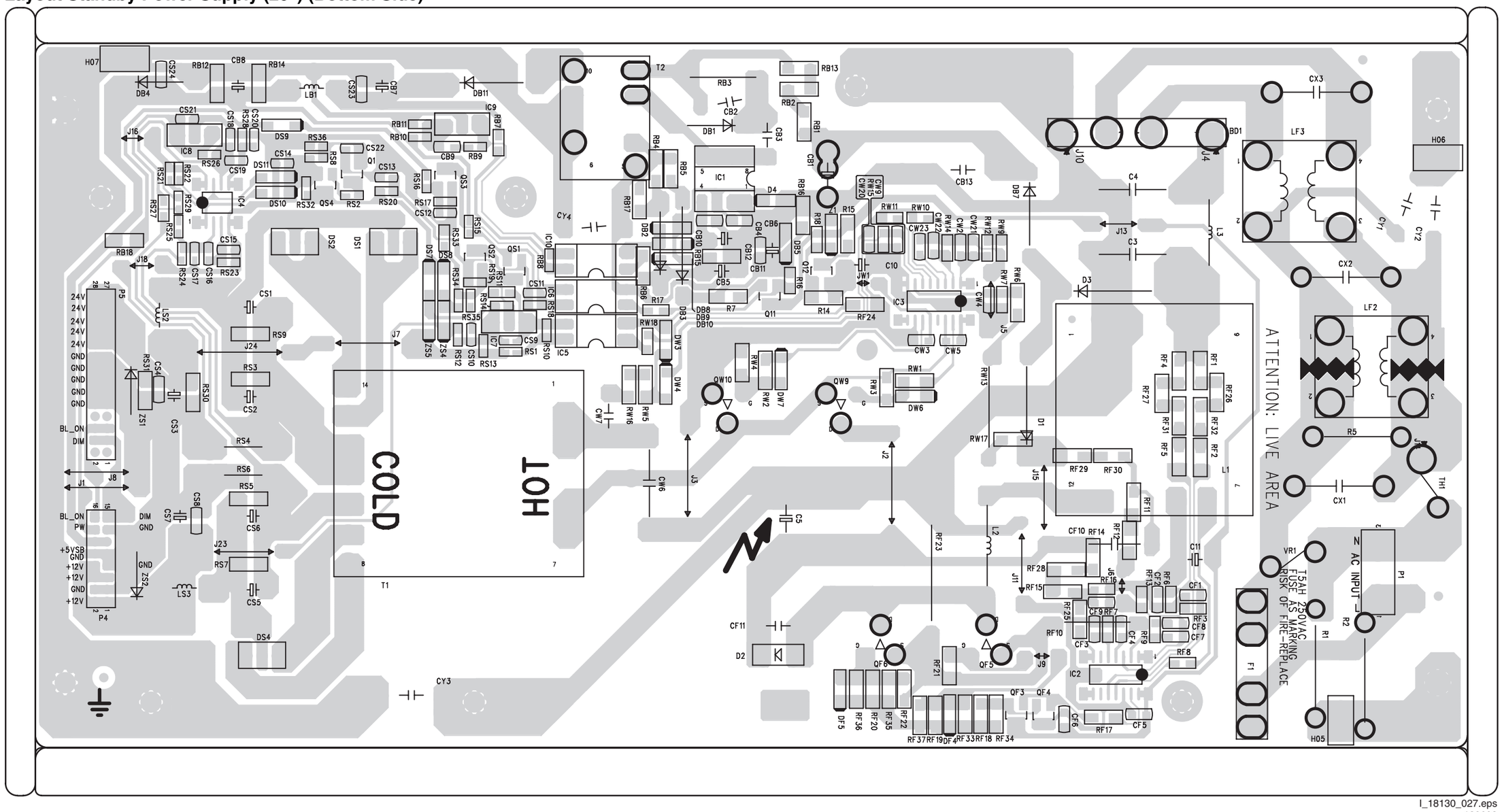
Layout Standby Power Supply (26") (Bottom Side)



I_18130_027.eps
180608

SSB: Control

B01 CONTROL

B01

Back Light Control

When not use DC-DC,+5VSTB_L provide

Option

Option:Far from tuner and power supply (NC)

Normal--H
Protect--L

1.8V

0.9V

L--Prot

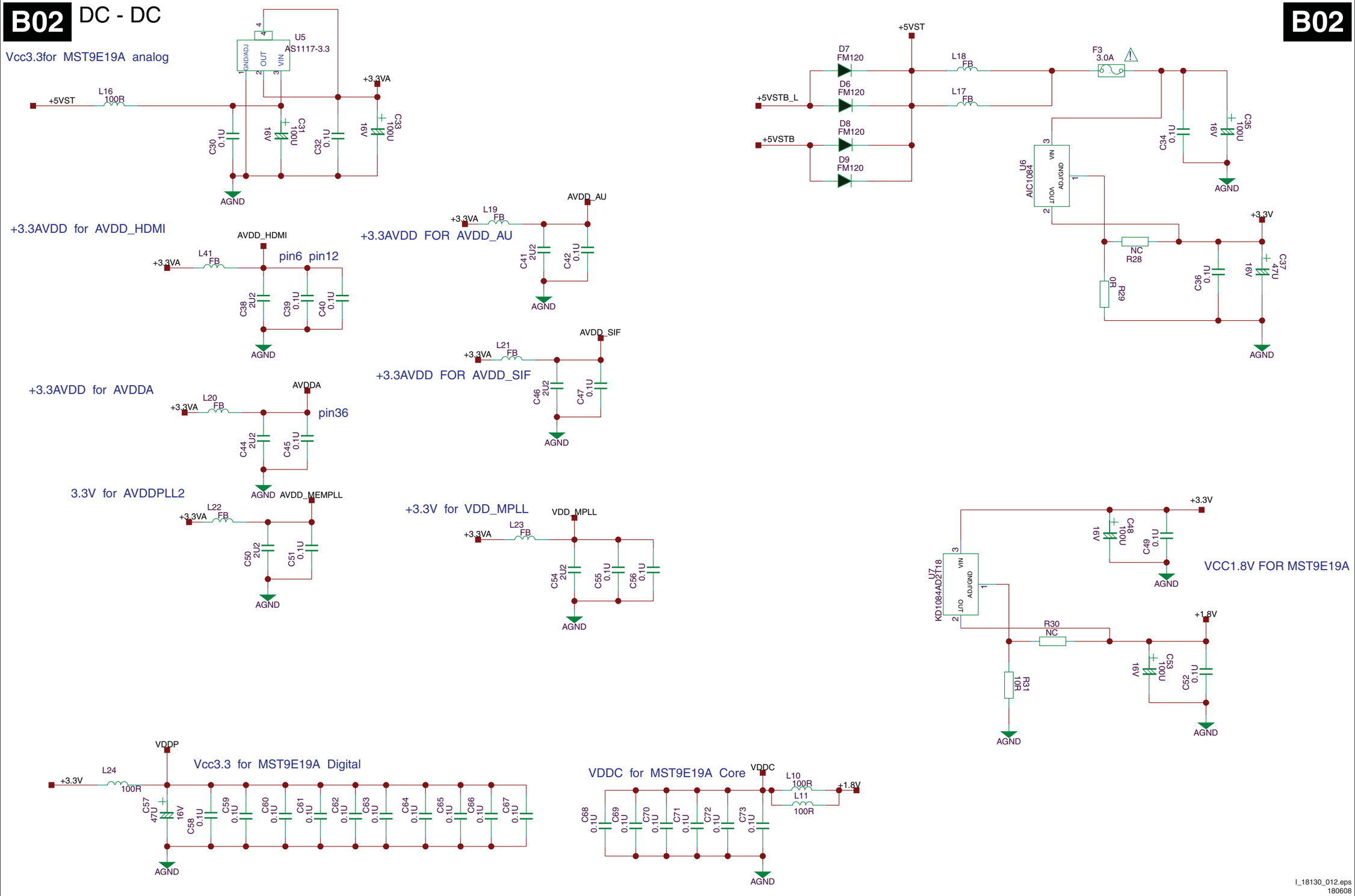
For Tuner 33v

Far from DC-DC & Tuner

I_18130_011.eps
180608

SSB: DC - DC

B02 DC - DC



SSB: MST9E19A Controller

B03 MST9E19A CONTROLLER

B03

Location Near IC Pin.

Location Near IC Pin.

Audio Output(to Amp)

AV Output(Audio)

DVI INPUT

VGA INPUT

HDTV INPUT

VIDEO INPUT

MSTAR PULL UP
SST PULL DOWN

For TTL output

I2C address at A0

HDCP I2C address at A4

For Philps debug

Debug Port

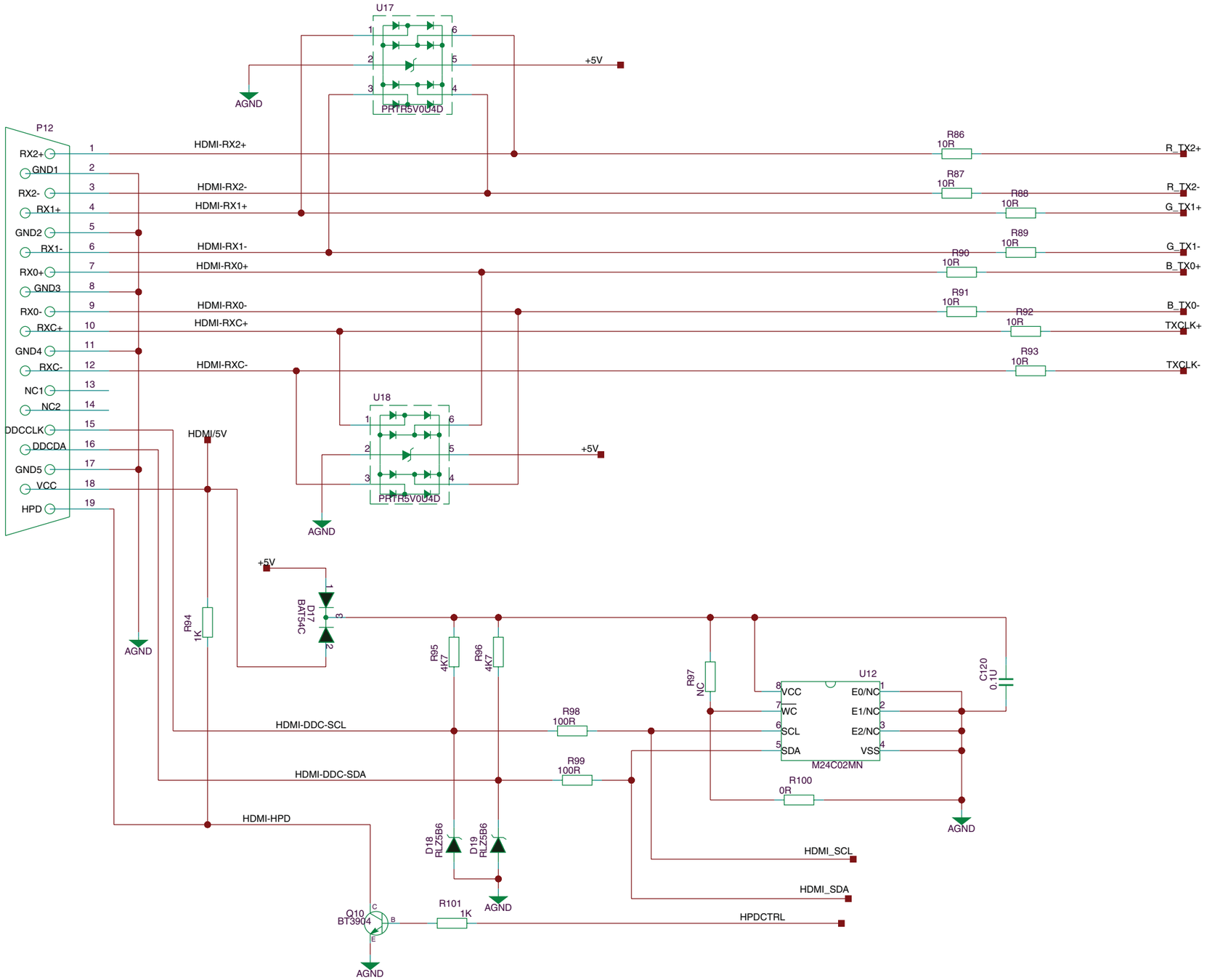
Mode Selection

I_18130_013.eps
180608

SSB: HDMI Interface

B04 HDMI INTERFACE

B04



I_18130_014.eps
180608

SSB: VGA Interface

B05 VGA INTERFACE

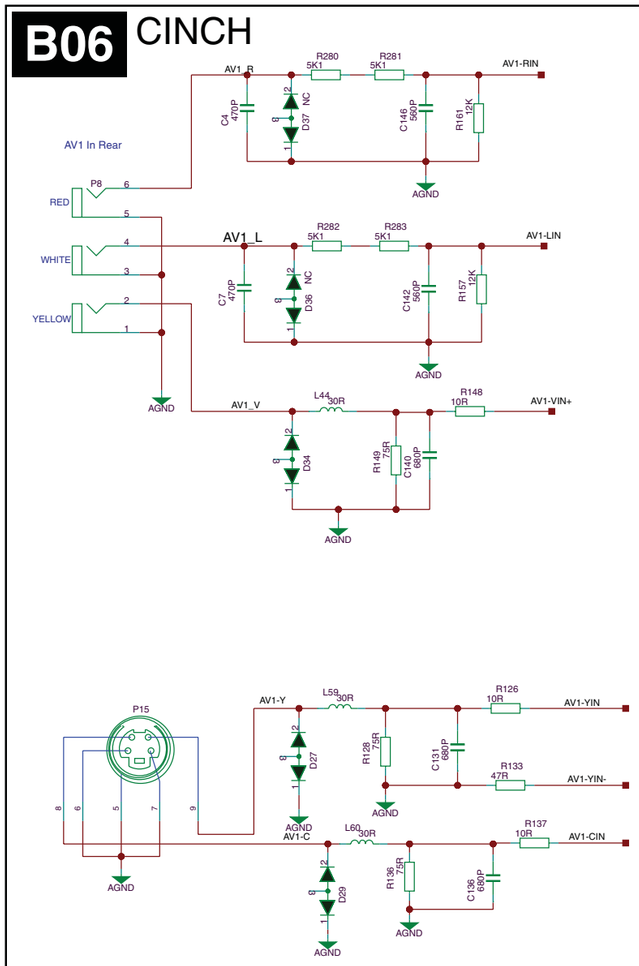
B05

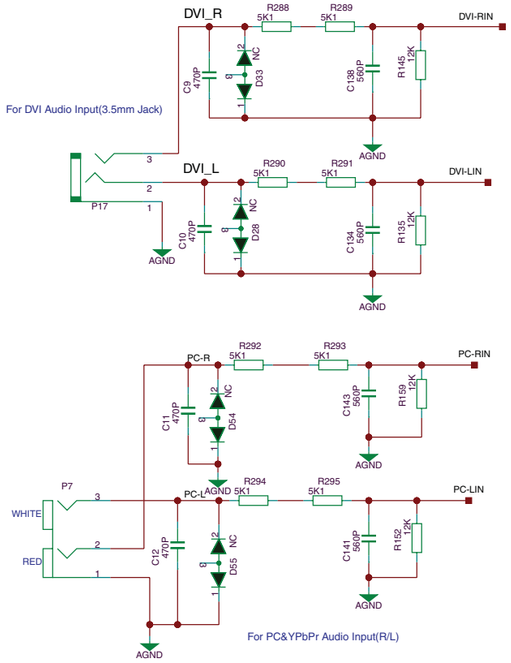
VGA/5V
P13
16
5
15
10
4
14
9
3
13
8
2
12
7
1
11
6
17
P13-11
R144 100R
PROTECT
VGA-B+
VGA-G+
VGA-R+
R103 10R
R104 10R
R105 10R
R106 330R
C121 0.047U
C122 0.047U
C123 0.047U
C124 1000P
BIN+
GIN+
RIN+
SOG
R107 75R
R108 75R
R109 75R
D20
D21
D22
R110 47R
R111 47R
R113 47R
C125 0.047U
C126 0.047U
C127 0.047U
BIN-
GIN-
RIN-
AGND
VGA-HS
VGA-VS
R114 1K
R115 1K
HS_RGB
VS_RGB
D24
R116 10K
C128 NC
R117 4K7
C129 NC
VGA-SDA
VGA-SCL
+5VST
D25
BAT54C
D23
R118 4K7
R119 4K7
C130 0.1U
U13
E0/NC
E1/NC
E2/NC
VSS
VCC
WC
SCL
SDA
M24C02MN
R120 100R
R121 100R
R122 4K7
R123 NC
D2
TXD
RXD
To main chip(when update,it is I2C,when debug ,it is RX/TX)
+5VSTB
+3.3V
R172 10K
R173 10R
R174 10K
R175 10R
R170 4K7
2N7002 Q18
2N7002 Q19
VGA-SDA
VGA-SCL
LED2
R171 NC
Q25 BT3904
C19 NC
Program Control

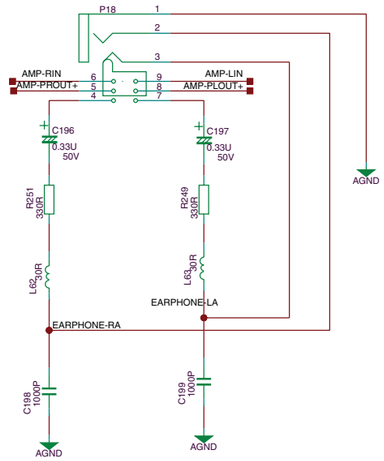
I_18130_015.eps
180608

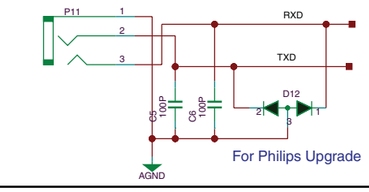
SSB: Cinch

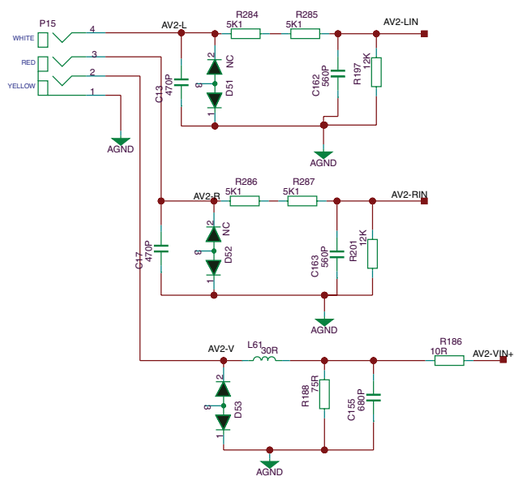
B06 CINCH

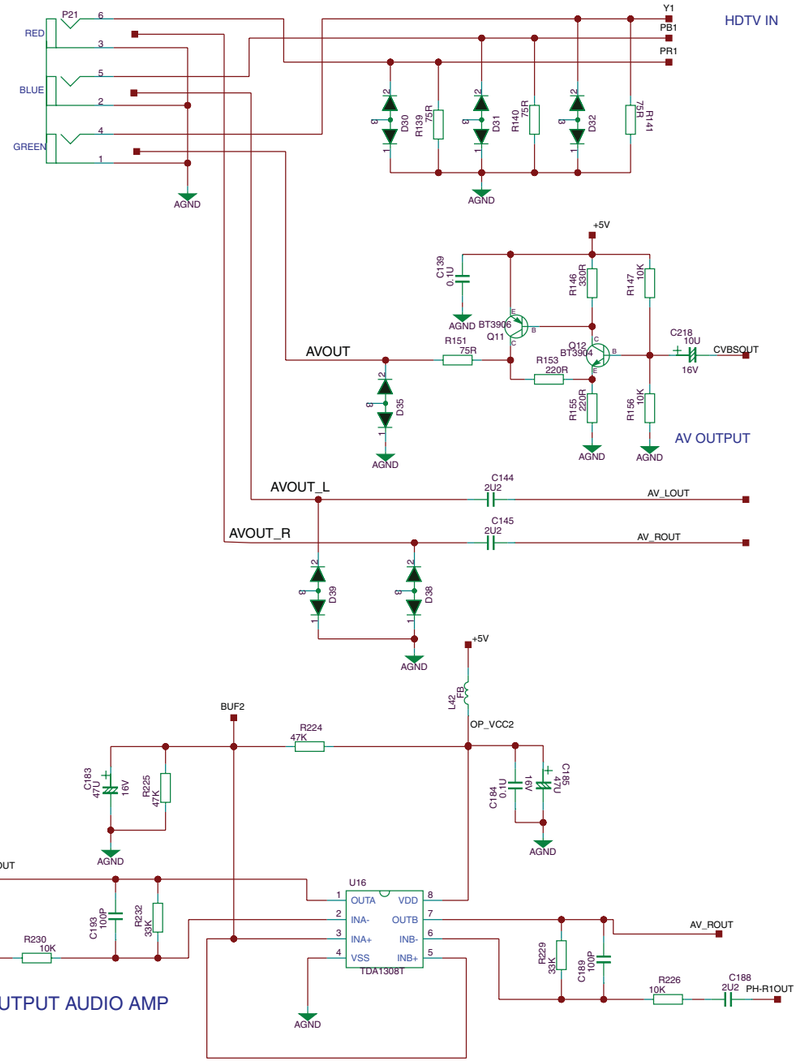


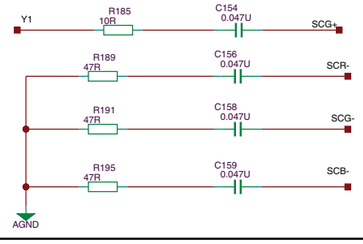












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180608

SSB: Tuner

B07 TUNER

B07

TU1

NC1 NC2 NC3 NC4 NC5 AUDIO SIFOUT GND1 SCL SDA AGC MB NC6 TU GND2 AFT VIDEO

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

+12V

R211 27R

U15 KIA78D05 (IN, COMMON, OUT)

C168 220U 16V

C169 220U 16V

L27 22UH

TUNER_5V

C200 2200P

C171 220U 16V

C172 0.1U

C164 4U7 50V

C165 0.01U

AGND

R202 51K

C166 0.01U

33V

C167 0.1U

R203 100K

AFT

CLOSE RO MST IC

TV_CVBS

L28 120R

R206 10R

TV1-VIN+

C174 NC/330P

C175 NC/330P

R207 NC

R210 47R

TV1-VIN-

SCL_EXT

R209 120R

TUNER_SCL

SDA_EXT

R212 120R

TUNER_SDA

C176 150P

C177 100P

TUNER_5V

0.01U C181

R192 10R

R198 1K

Q20 BT3904 (C, B, E)

0.01U C170

R199 1K

R193 330R

R220 10R

TV-SIFP

R194 100R

TV-SIFM

SIF_OUT

R213 NC

TV-SIFP

I_18130_017.eps
180608

SSB: Audio Amplifier

B08 AUDIO AMPLIFIER

B08

P9
4 AMP-PROUT-
3 AMP-RIN
2 AMP-LIN
1 AMP-PLOUT-
C195 NC
C194 NC
AGND

AMP-L
AMP-R
C203 2U2
C205 2U2
0.022U C26
C204 1000P
C206 1000P
0.022U C25
AGND

12V-AMP
+12V
L31 27UH
C219 220U 16V
C217 220U 16V
0.1U C209
PGND
R243 10K
R244 10K
AGND
1U C211
AGND

TO SPEAKER
AMP-PROUT-
AMP-PROUT+
U19 TDA7266
1 OUT1+
2 OUT1-
3 VCC1
4 IN1
5 NC1
6 MUTE
7 STBY
8 PW_GND
9 S_GND
10 NC2
11 NC3
12 IN2
13 VCC2
14 OUT2-
15 OUT2+
H8
PGND
AMP-PLOUT+
AMP-PLOUT-
TO SPEAKER

+12V
R162 0R
R164 100K
D3 LL4148
Q15 BT3906
R165 10K
Q16 BT3904
R166 3K3
R167 3K3
R168 NC
R169 NC
AGND
C22 470U 16V
AGND

AMP-MUTE
R252 10K
Q22 BT3904
AGND

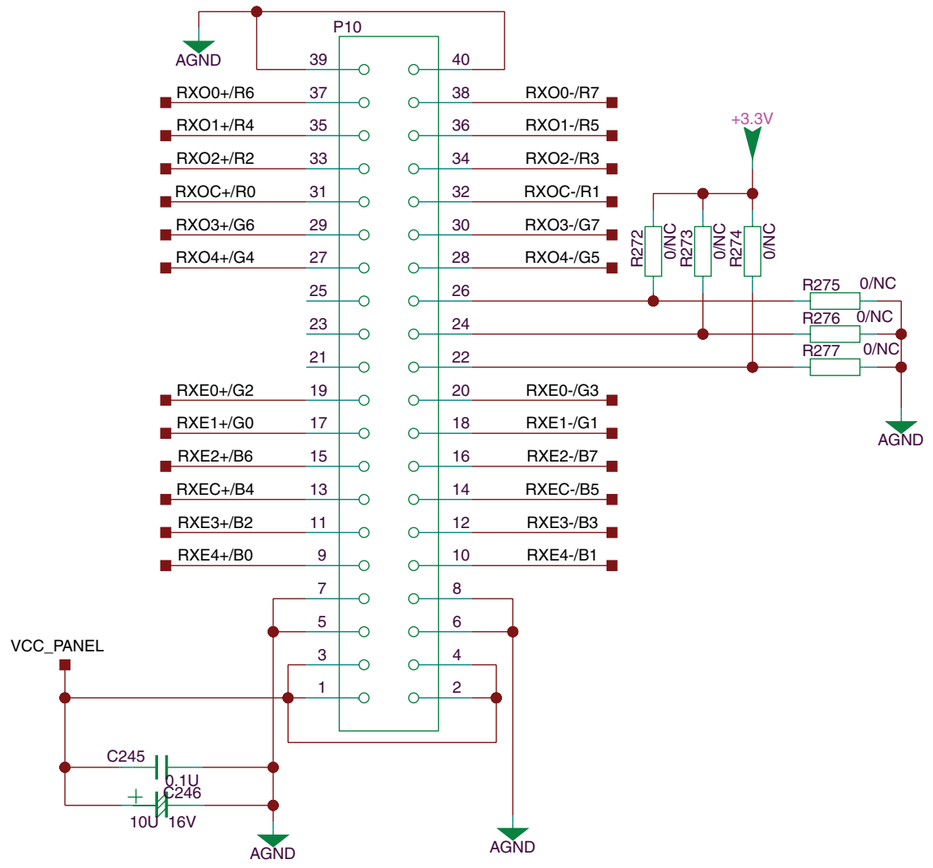
+5VST
R253 NC
R254 10K
Q23 BT3904
R255 100R
R256 0R
POWER-ON/OFF
R257 0R
Q24 BT3904/NC
AGND

L45 200R
L46 200R
PGND
AGND

I_18130_018.eps
180608

SSB: LVDS Interface

B09 LVDS INTERFACE B09



I_18130_019.eps
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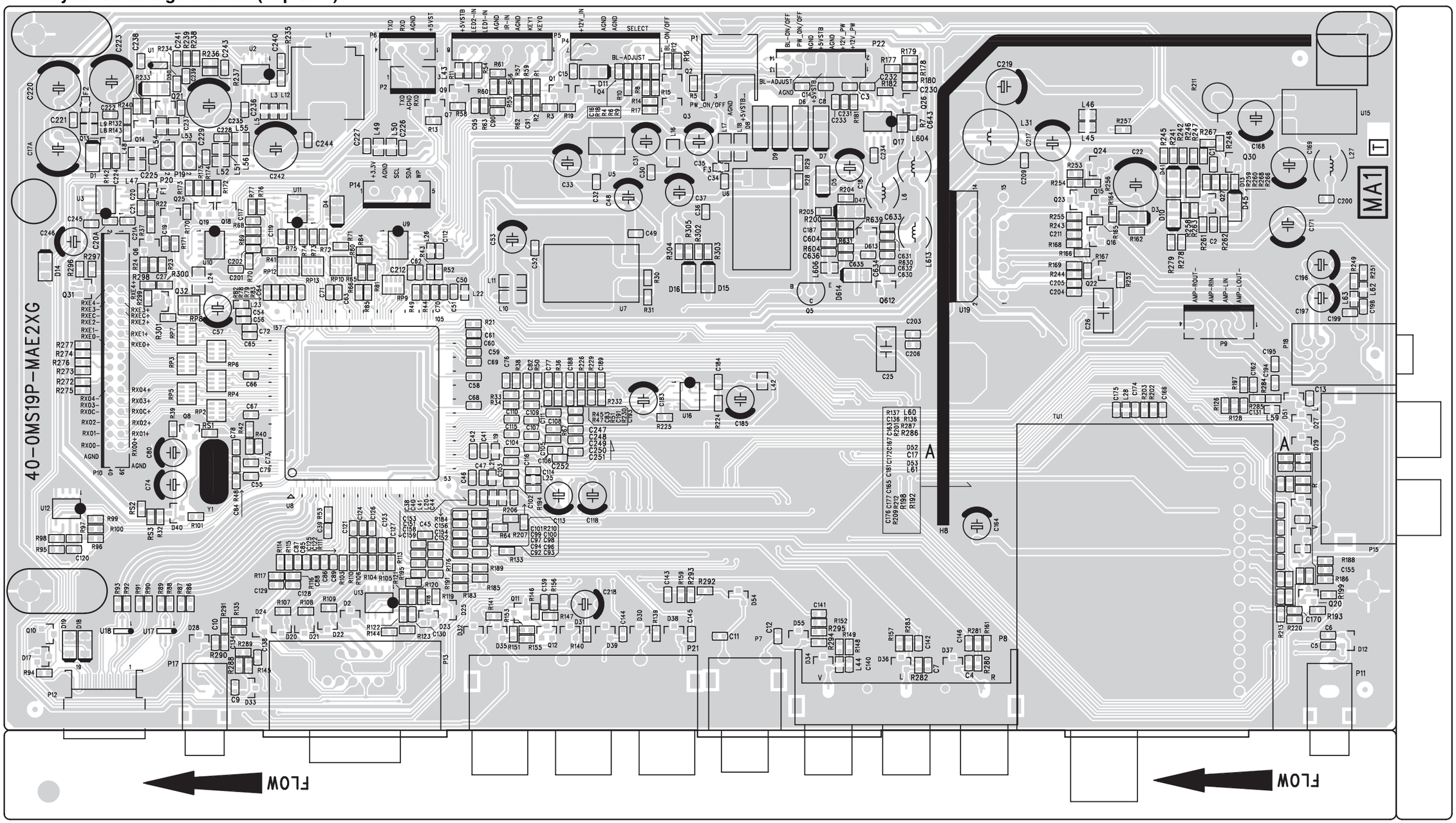
Personal Notes:

E_06532_012.eps
131004

Layout Small Signal Board (Top Side)



I_18130_020.eps
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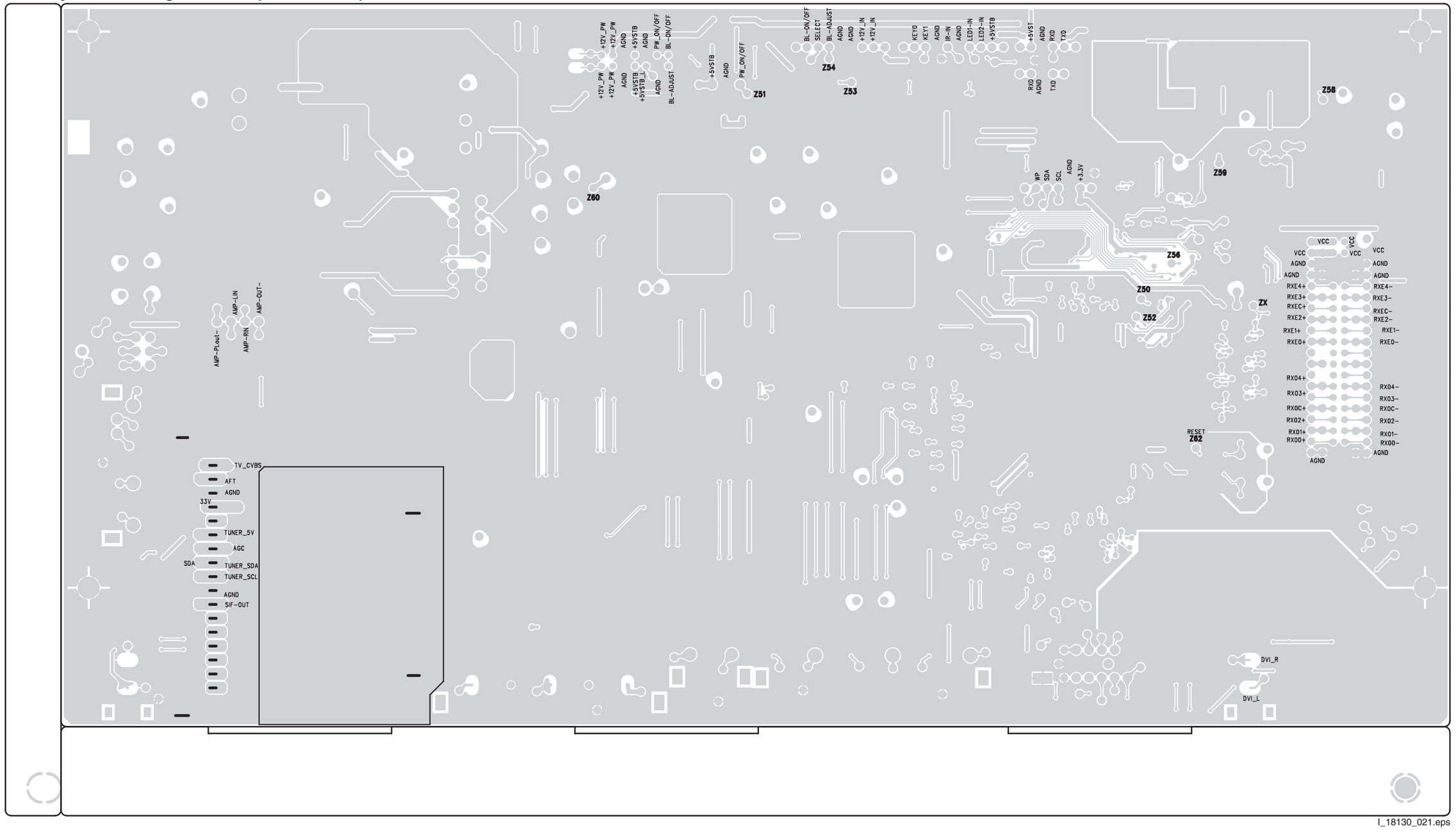
Layout Small Signal Board (Bottom Side)



I_18130_021.eps
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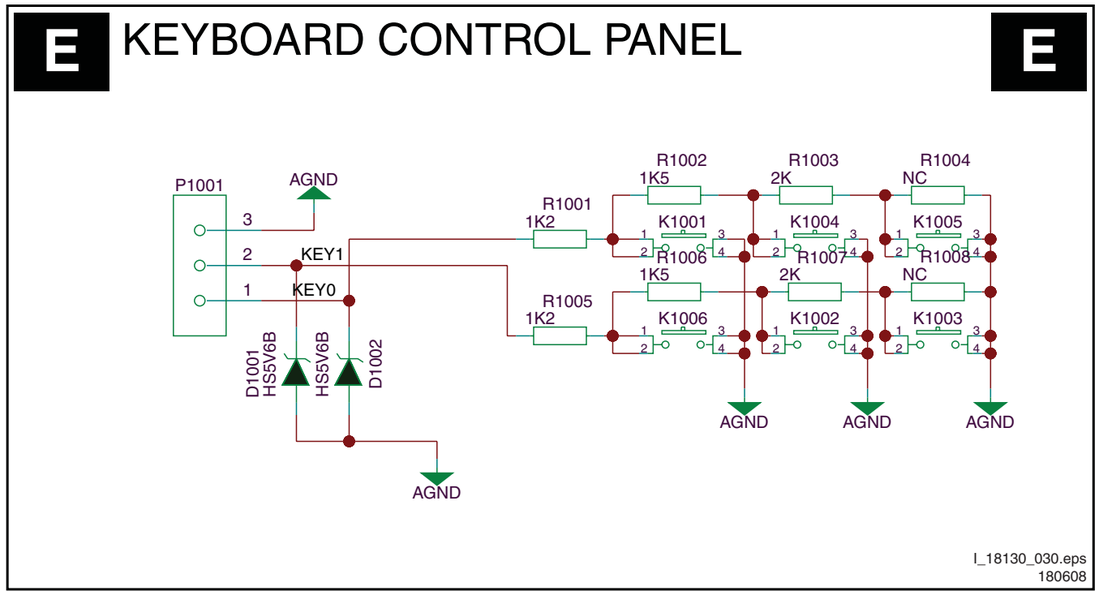
Keyboard Control Panel



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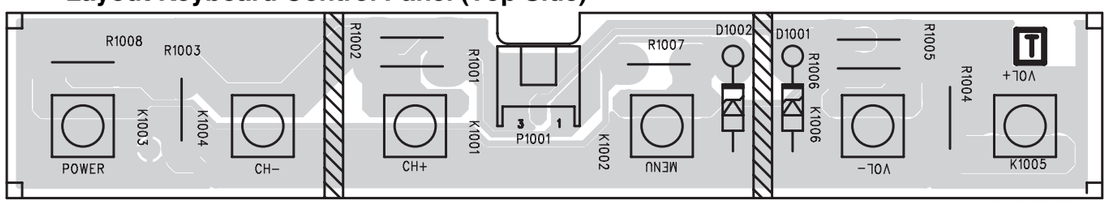
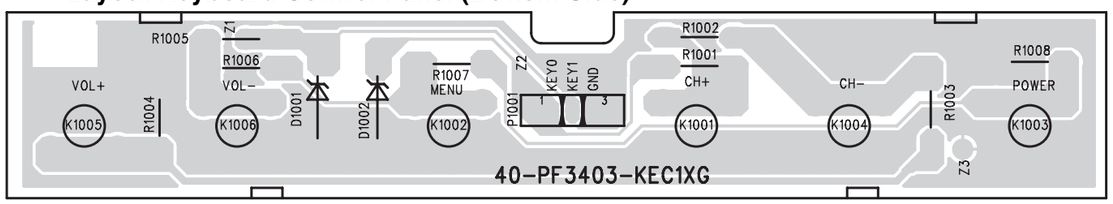
Layout Keyboard Control Panel (Top Side)



I_18130_031.eps
180608

Layout Keyboard Control Panel (Bottom Side)



I_18130_032.eps
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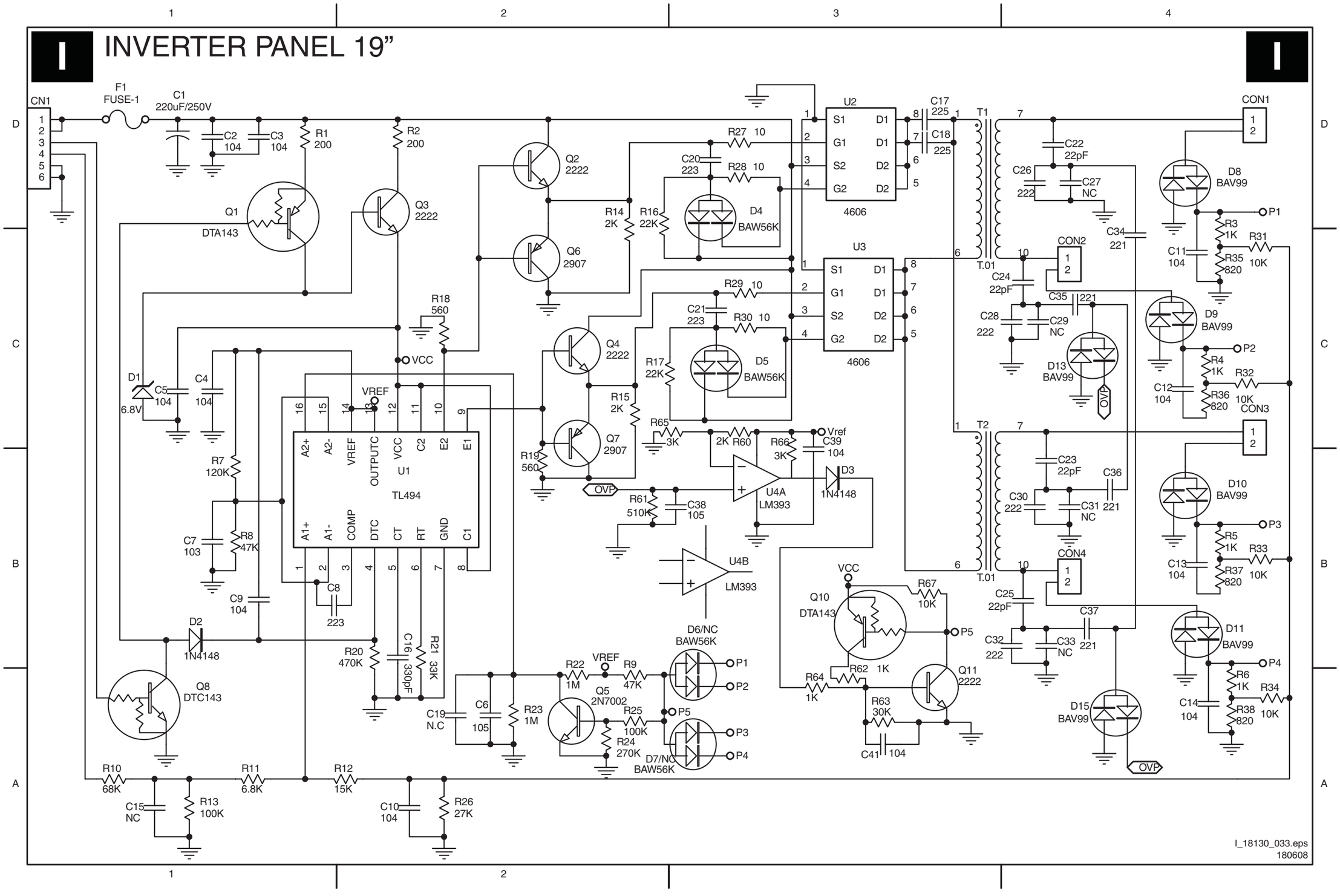
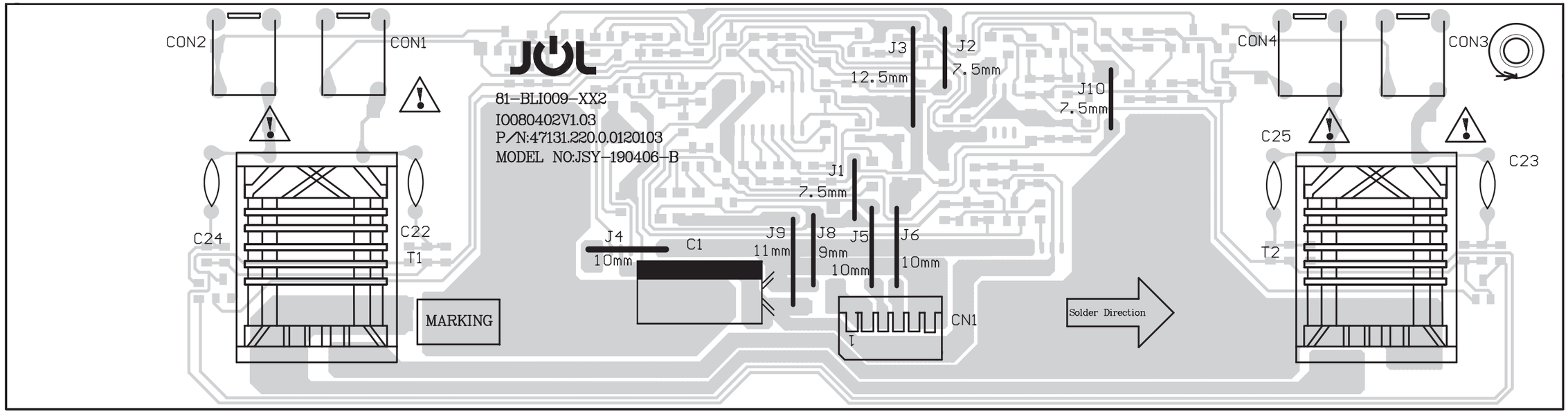
Personal Notes:

E_06532_012.eps
131004

Inverter Panel

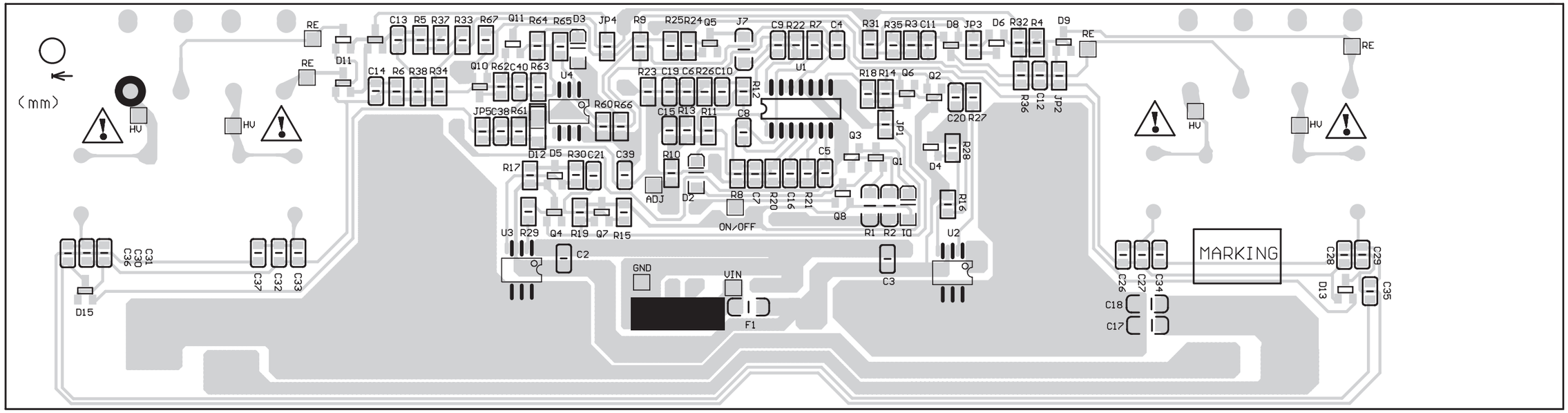


Layout Inverter Panel (Top Side)



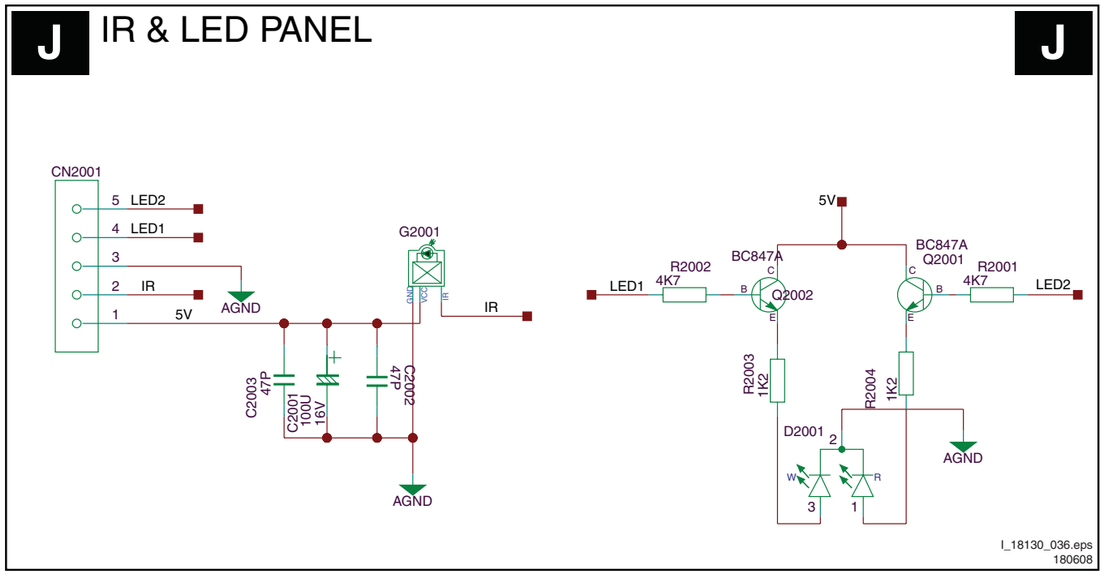
I_18130_034.eps
190608

Layout Inverter Panel (Bottom Side)

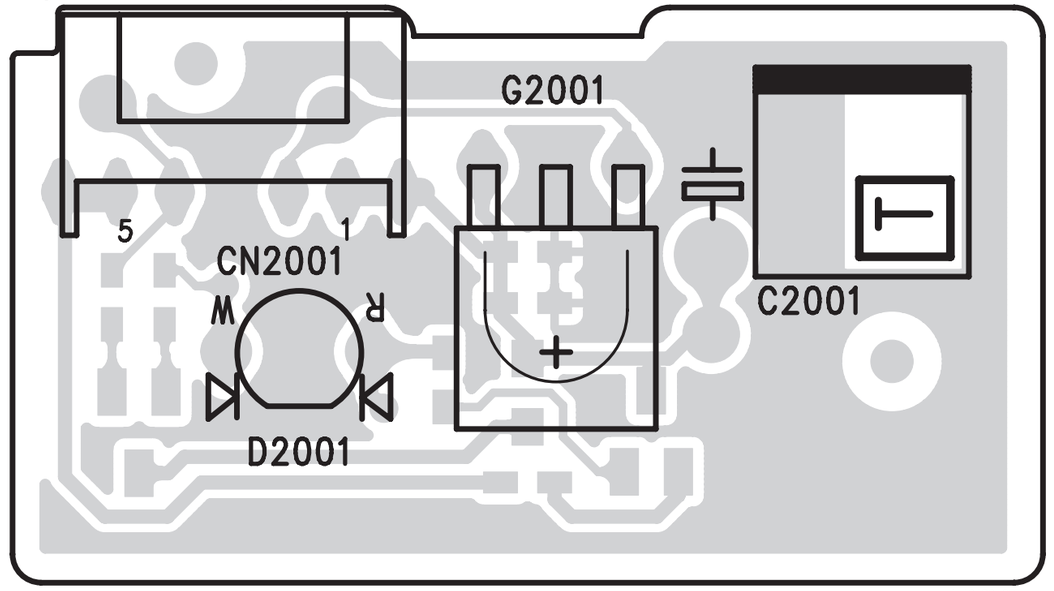


I_18130_035.eps
190608

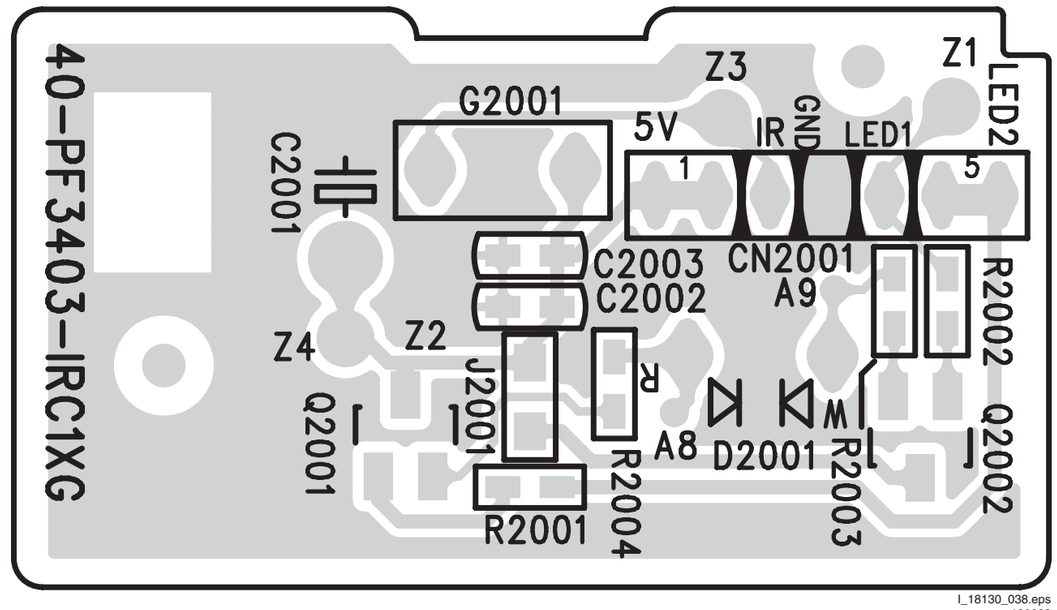
IR LED Panel



Layout IR LED Panel (Top Side)



Layout IR LED Panel (Bottom Side)



Personal Notes:

E_06532_013.eps
131004

8. Alignments

Index of this chapter:
8.1 Electrical Alignments
8.2 Hardware Alignments

Note:
The Service Modes are described in chapter 5. Menu navigation is done with the CURSOR UP, DOWN, LEFT or RIGHT keys of the remote control transmitter.

8.1 Electrical Alignments

Perform all electrical adjustments under the following conditions:
- Power supply voltage (depends on region):
  - AP-NTSC: 120 VAC or 230 VAC / 50 Hz (± 10%).
  - AP-PAL-multi: 120 - 230 VAC / 50 Hz (± 10%).
  - EU: 230 VAC / 50 Hz (± 10%).
  - LATAM-NTSC: 120 - 230 VAC / 50 Hz (± 10%).
  - US: 120 VAC / 60 Hz (± 10%).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 60 minutes.
- Measure voltages and waveforms in relation to correct ground (e.g. measure audio signals in relation to AUDIO_GND).
  Caution: It is not allowed to use heatsinks as ground.
- Test probe: R_i > 10 MΩ, C_i < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

8.2 Hardware Alignments

Not applicable.

8.2.1 Aging

Enter TV mode. Set warm up status to “On”. Aging time: at least 12 minutes.

8.2.2 ADC Adjustment

The chassis can execute ADC auto-tune in YPbPr & PC sourcing modes. Enter SAM, select YPbPr or PC as source, then select AUTOTUNE in ADC ADJ, press “Right key” to run, waiting for about 5 seconds until “OK” is displayed, which means the set finished the ADC adjustment.
With an YPbPr source, use a 100% color bar pattern, with a PC source, use a 16-scale grey pattern.

8.2.3 White Balance Adjustment

Adjust the NORMAL, WARM, COOL temperature in White balance according to company regular. Make sure ADC adjustments have done successfully before doing white balance adjustments, and use the “Natural” picture mode.
White balance adjustment should be performed with three different sources:
1. AV/TV/SVIDEO source reunification under the AV adjustment: apply a NTSC-M system signal with 8-scale grey pattern.
2. YPbPr/HDMI source reunification under the YPbPr adjustment: apply an 8-scale grey pattern
3. PC source should adjust single: apply a 8-scale grey pattern.

If case of manual adjustment, please use the WB page in SAM. While adjusting White Balance do not change White G or Black G, only adjust White R, White B, Black R and Black B

Table 8-1 Color Temperature Setting 19"

Color mode	X	Y	Color Temperature (K)
Normal	296±4	299±4	8000
Warm	314±4	319±4	6500
Cool	289±4	291±4	9000

Table 8-2 Color Temperature Setting 26"

Color mode	X	Y	Color Temperature (K)
Normal	289±4	291±4	9000
Warm	314±4	319±4	6500
Cool	278±4	278±4	11000

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

9.1 Introduction
9.2 Abbreviation List
9.3 IC Data Sheets

Notes:

- Only **new** circuits (circuits that are not published recently) are described.
- Figures can deviate slightly from the actual situation, due to different set executions.

9.1 Introduction

This chassis uses the MStar MST9U19A main chip, with the following features:

- Multi-Standard TV decoding with 2-D comb filter
- Multi-Standard TV sound demodulator and decoder
- Triple ADC fro TV and RGB/YPbPr
- Integrated DVI/HDCP/HDMI compliant receiver
- High quality scaling engine
- 3-D video de-interlacer and video noise reduction
- Embedded On Screen Display controller
- NTSC/PAL/Secam Video decoder with automatic standard detection
- CVBS video output
- Multi standard TV sound decoder
- FM stereo and SAP demodulation
- Digital audio interface
- Analog RGB Compliant Input Ports
- DVI/HDCP/HDMI Compliant input port
- Auto tuning function including phasing, positioning, offset, gain and jitter detection
- Automatic color correction

The MST9U19A is a high performance and fully integrated IC for multi-function LCD monitor/TV with resolutions up to WSXGA (1680 × 1050). It is configured with an integrated triple-ADC/PLL, an integrated DVI/HDCP/HDMI receiver, a multi standard TV video and audio decoder, a video de-interlacer, a scaling engine, the MStarACE-3 color engine, an On Screen Display controller, an 8-bit MCU, and a built-in output panel interface. It also incorporates an intelligent power management control system for green-mode requirements and spread-spectrum support for EMI management.

For a block diagram, refer to chapter 6 “Block diagrams, Test Point Overviews, and Waveforms”.

9.2 Abbreviation List

1080i	1080 visible lines, interlaced
1080p	1080 visible lines, progressive scan
2CS	2 Carrier Sound
2DNR	Spatial (2D) Noise Reduction
3DNR	Temporal (3D) Noise Reduction
480i	480 visible lines, interlaced
480p	480 visible lines, progressive scan
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeping up the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AUO	Acer Unipack Optronics
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASD	Automatic Standard Detection
AV	Audio Video
B-SC1-IN	Blue SCART1 in
B-SC2-IN	Blue SCART2 in
B-TXT	Blue teletext
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BTSC	Broadcast Television System Committee
C-FRONT	Chrominance front input
CBA	Circuit Board Assembly (or PWB)
CL	Constant Level: audio output to connect with an external amplifier
CLUT	Color Look Up Table
ComPair	Computer aided rePair
CSM	Customer Service Mode
CVBS	Composite Video Blanking and Synchronization
CVBS-EXT	CVBS signal from external source (VCR, VCD, etc.)
CVBS-INT	CVBS signal from Tuner
CVBS-MON	CVBS monitor signal
CVBS-TER-OUT	CVBS terrestrial out
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DFU	Directions For Use: owner's manual
DNR	Dynamic Noise Reduction
DRAM	Dynamic RAM
DSP	Digital Signal Processing
DST	Dealer Service Tool: special (European) remote control designed for service technicians
DTS	Digital Theatre Sound
DVD	Digital Versatile Disc
DVI	Digital Visual Interface
DW	Double Window
ED	Enhanced Definition: 480p, 576p
EEPROM	Electrically Erasable and Programmable Read Only Memory
EU	EUrope
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FBL	Fast Blanking: DC signal accompanying RGB signals
FBL-SC1-IN	Fast blanking signal for SCART1 in
FBL-SC2-IN	Fast blanking signal for SCART2 in
FBL-TXT	Fast Blanking Teletext
FLASH	FLASH memory
FM	Field Memory / Frequency Modulation
FMR	FM Radio
FRC	Frame Rate Converter
FRONT-C	Front input chrominance (SVHS)
FRONT-DETECT	Front input detection
FRONT-Y_CVBS	Front input luminance or CVBS (SVHS)
FTV	Flat TeleVision
G-SC1-IN	Green SCART1 in
G-SC2-IN	Green SCART2 in
G-TXT	Green teletext
H	H_sync to the module
HD	High Definition: 720p, 1080i, 1080p
HDMI	High Definition Multimedia Interface, digital audio and video interface
HP	Head Phone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I2C	Integrated IC bus
I2S	Integrated IC Sound bus
IC	Integrated Circuit
IF	Intermediate Frequency
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in “pairs”, causing line flicker.
IR	Infra Red
IRQ	Interrupt ReQuest
Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according the customers wishes
LATAM	LATin AMerica
LC04	Philips chassis name for LCD TV 2004 project
LCD	Liquid Crystal Display
LED	Light Emitting Diode
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
LPL	LG Philips LCD
LS	Loud Speaker
LVDS	Low Voltage Differential Signalling, data transmission system for high speed and low EMI communication.
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
MPEG	Motion Pictures Experts Group
MSP	Multi-standard Sound Processor: ITT sound decoder
MUTE	MUTE Line
NAFTA	North American Free Trade Association: Trade agreement between Canada, USA and Mexico
NC	Not Connected
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, used mainly in Europe.
NTSC	National Television Standard Committee. Color system used mainly in North America and Japan. Color carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
NVM	Non Volatile Memory: IC containing TV related data (for example, options)
O/C	Open Circuit
ON/OFF LED	On/Off control signal for the LED

OSD	On Screen Display
PAL	Phase Alternating Line. Color system used mainly in Western Europe (color carrier = 4.433619 MHz) and South America (color carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
PC	Personal Computer
PCB	Printed Circuit Board (or PWB)
PDP	Plasma Display Panel
PIG	Picture In Graphic
PIP	Picture In Picture
PLL	Phase Locked Loop. Used, for example, in FST tuning systems. The customer can directly provide the desired frequency
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
PWB	Printed Wiring Board (or PCB)
RAM	Random Access Memory
RC	Remote Control transmitter
RC5 (6)	Remote Control system 5 (6), the signal from the remote control receiver
RGB	Red, Green, and Blue. The primary color signals for TV. By mixing levels of R, G, and B, all colors (Y/C) are reproduced.
RGBHV	Red, Green, Blue, Horizontal sync, and Vertical sync
ROM	Read Only Memory
SAM	Service Alignment Mode
SC	SandCastle: two-level pulse derived from sync signals
SC1-OUT	SCART output of the MSP audio IC
SC2-B-IN	SCART2 Blue in
SC2-C-IN	SCART2 chrominance in
SC2-OUT	SCART output of the MSP audio IC
S/C	Short Circuit
SCL	Clock signal on I2C bus
SD	Standard Definition: 480i, 576i
SDA	Data signal on I2C bus
SDI	Samsung Display Industry
SDM	Service Default Mode
SDRAM	Synchronous DRAM
SECAM	SEequence Couleur Avec Memoire. Color system used mainly in France and Eastern Europe. Color carriers = 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
SMPS	Switch Mode Power Supply
SND	SouND
SNDL-SC1-IN	Sound left SCART1 in
SNDL-SC1-OUT	Sound left SCART1 out
SNDL-SC2-IN	Sound left SCART2 in
SNDL-SC2-OUT	Sound left SCART2 out
SNDR-SC1-IN	Sound right SCART1 in
SNDR-SC1-OUT	Sound right SCART1 out
SNDR-SC2-IN	Sound right SCART2 out
SNDR-SC2-OUT	Sound right SCART2 out
SNDS-VL-OUT	Surround sound left variable level out
SNDS-VR-OUT	Surround sound right variable level out
SOPS	Self Oscillating Power Supply
S/PDIF	Sony Philips Digital InterFace
SRAM	Static RAM
STBY	Stand-by
SVHS	Super Video Home System
SW	Sub Woofer / SoftWare
THD	Total Harmonic Distortion
TXT	TeleteXT
uP	Microprocessor
VL	Variable Level out: processed audio output toward external amplifier
VCR	Video Cassette Recorder
VGA	Video Graphics Array
WD	Watch Dog
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XTAL	Quartz crystal
YPbPr	Component video (Y= Luminance, Pb/Pr= Color difference signals B-Y and R-Y, other amplitudes w.r.t. to YUV)
Y/C	Video related signals: Y consists of luminance signal, blanking level and sync; C consists of color signal.
Y-OUT	Luminance-signal
YUV	Baseband component video (Y= Luminance, U/V= Color difference signals)

9.3 IC Data Sheets

This section shows the internal block diagrams and pin layouts of ICs that are drawn as “black boxes” in the electrical diagrams (with the exception of “memory” and “logic” ICs).

9.3.1 Diagram B, MST9U19A

Pin Configuration

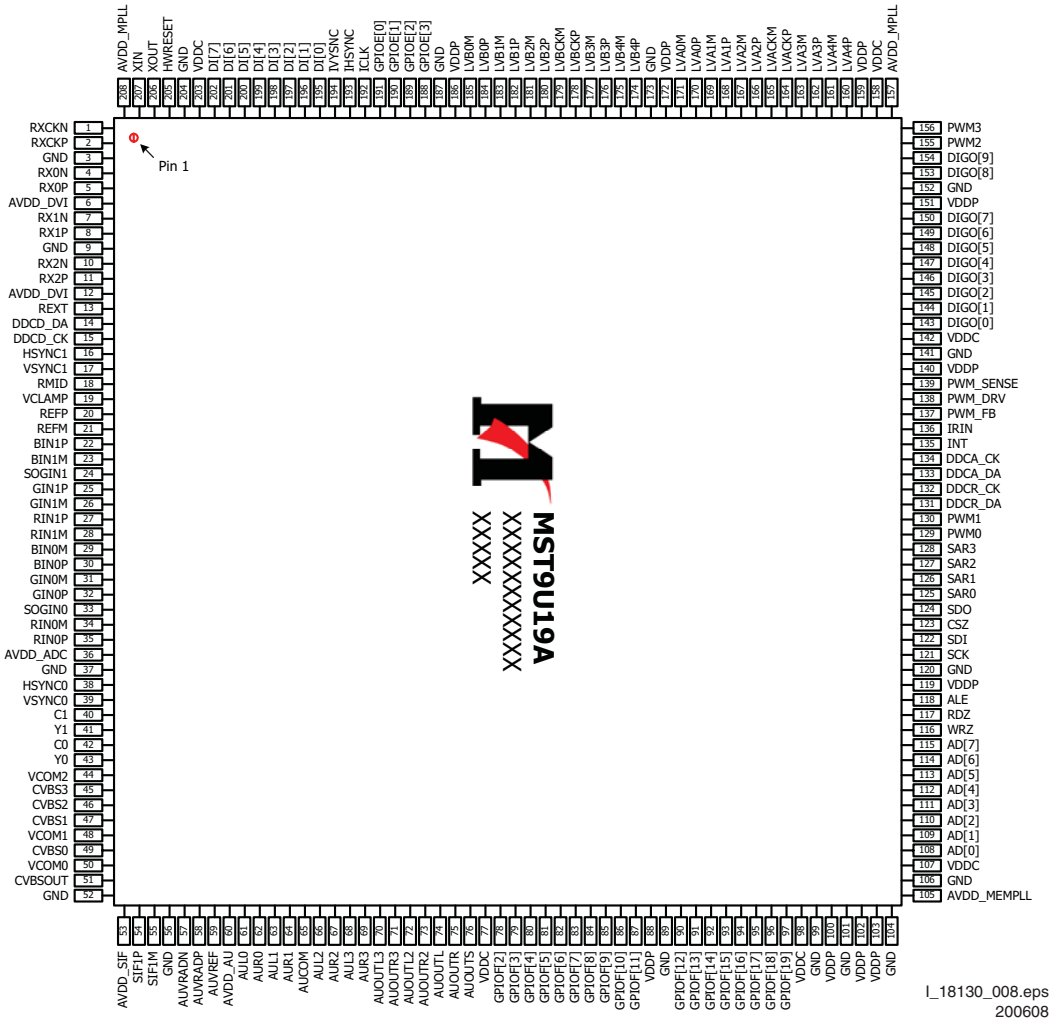
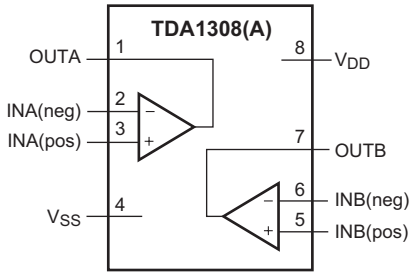


Figure 9-1 Pin configuration

9.3.2 Diagram B, TDA1308

Block diagram



Pinning information

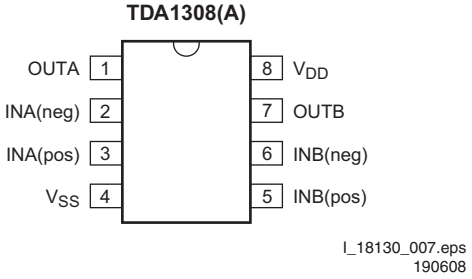
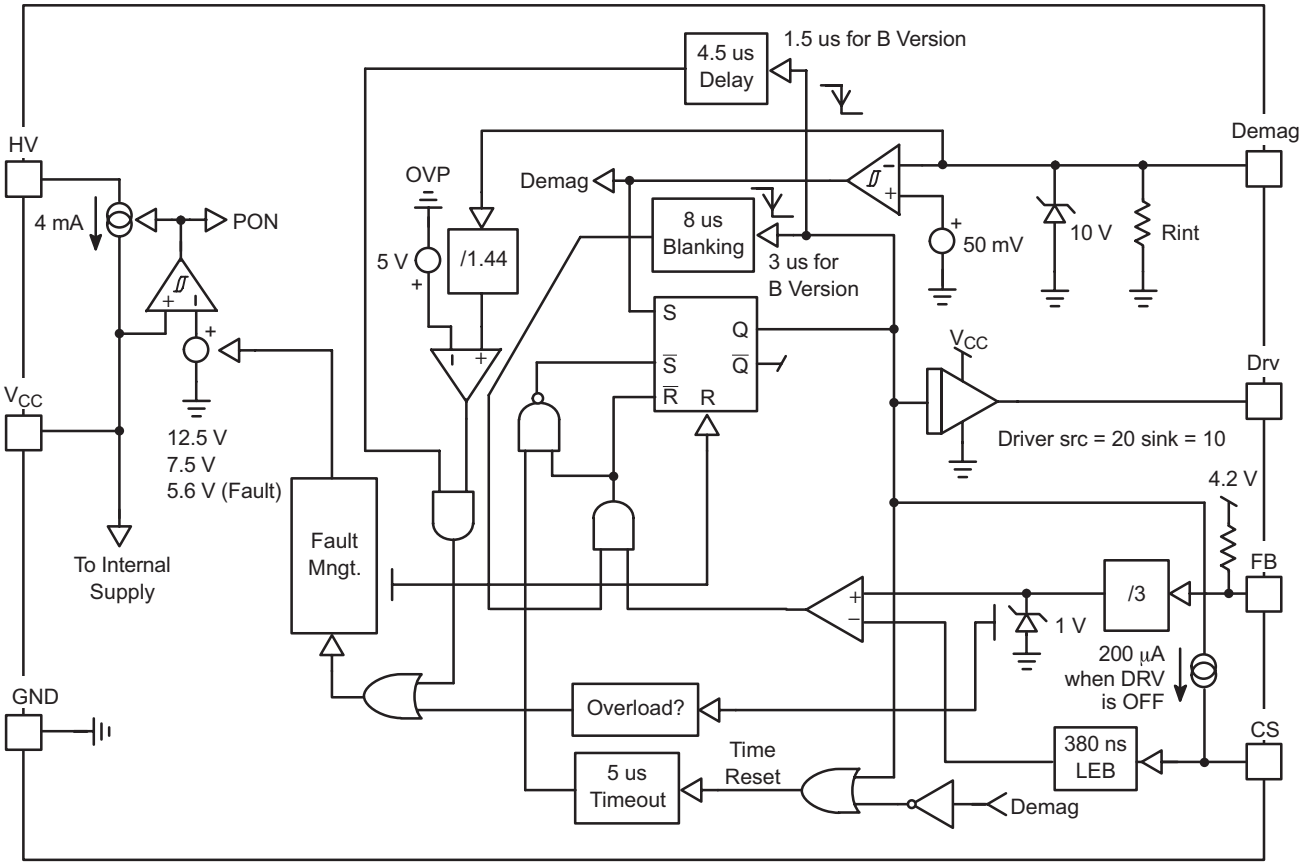


Figure 9-2 Block diagram and pin configuration

9.3.3 Diagram B, NCP1377B

Block diagram



Pinning information

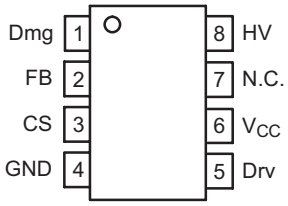


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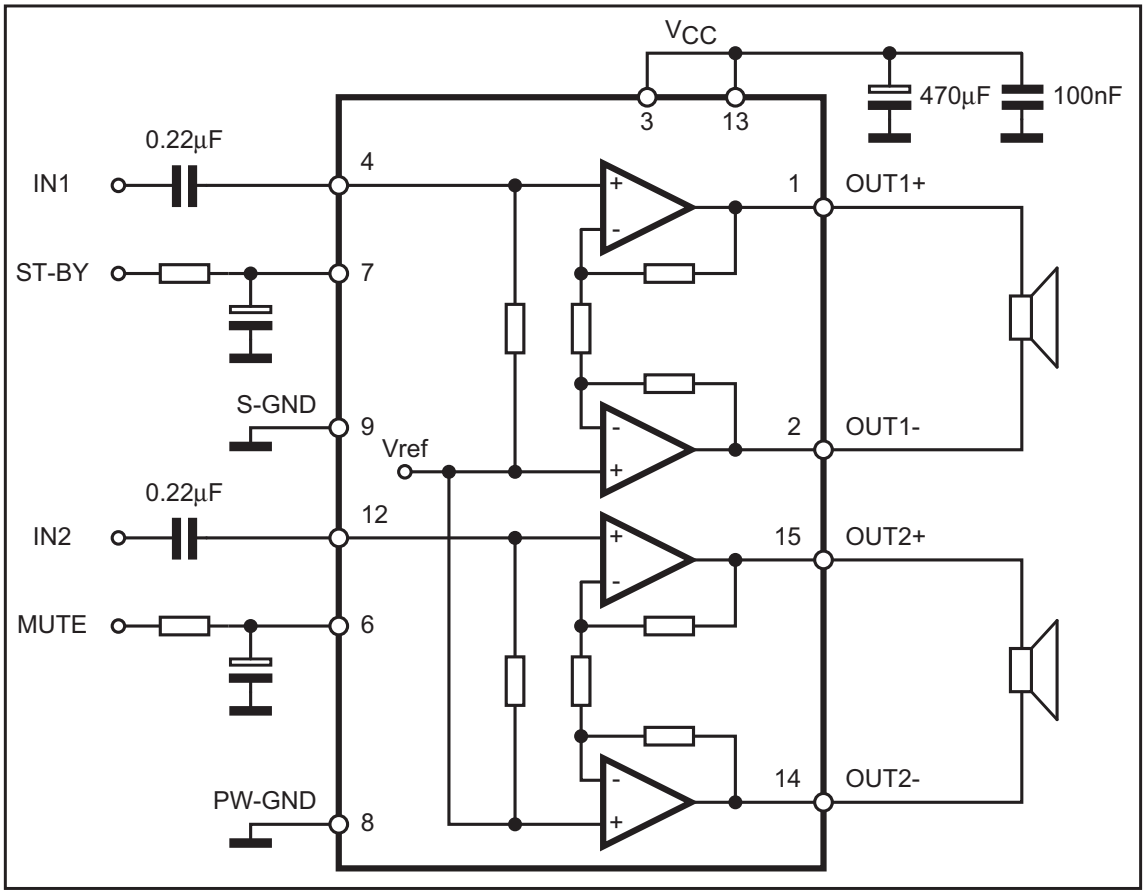
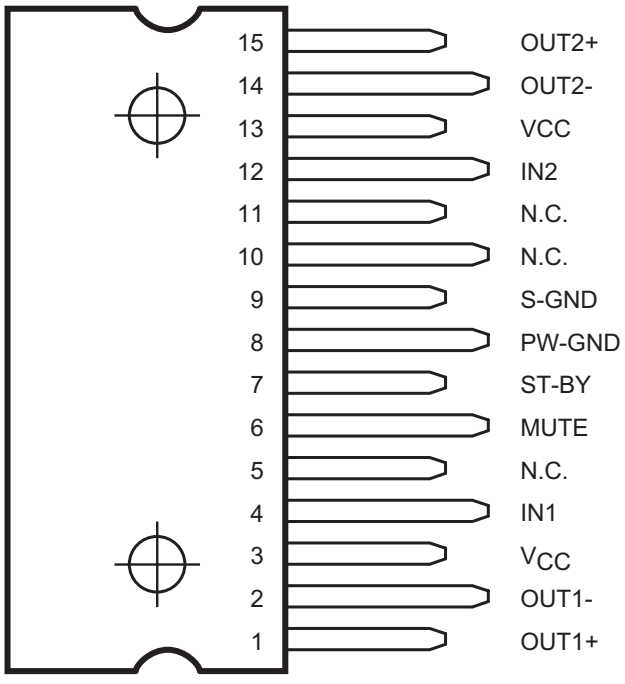
Figure 9-3 Block diagram and pin configuration

9.3.4 Diagram B, TDA7266

Block Diagram



Pin Configuration



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090508

Figure 9-4 Block diagram and pin configuration

10. Spare Parts List & CTN Overview

For the latest spare part overview, please consult the Philips Service website.

Table 10-1 Sets described in this manual:

CTN	Styling
19PFL3403/55	MG8
19PFL3403/77	MG8
19PFL3403/78	MG8
19PFL3403/85	MG8
26PFL3403/85	MG8

11. Revision List

Manual xxxx xxx xxxx.0

- First release.